Appendix E: Test Data for E-UTRA Band 12

Product Name: 4G Router/4G LTE/Wireless Router
Trade Mark: TODAAIR
Test Model: TD954G2

Environmental Conditions

Temperature:	24.3° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Tom.Liu

E.1 Conducted Output Power

Conducted Output Power Test Result (Channel Bandwidth: 1.4 MHz)						
Modulation	Channel	RB Configuration		Average Power [dBm]	Average Power [dBm]	Verdict
		Size	Offset	QPSK	16QAM	
QPSK / 16QAM	LCH	1	0	22.26	21.32	PASS
		1	3	22.24	21.66	PASS
		1	5	22.05	21.45	PASS
		3	0	22.28	21.48	PASS
		3	2	22.29	21.48	PASS
		3	3	22.20	21.38	PASS
		6	0	22.24	21.29	PASS
	MCH	1	0	23.93	23.34	PASS
		1	3	24.09	23.54	PASS
		1	5	24.10	23.51	PASS
		3	0	23.90	22.81	PASS
		3	2	24.03	23.04	PASS
		3	3	24.01	23.10	PASS
		6	0	23.24	22.14	PASS
	HCH	1	0	24.75	23.81	PASS
		1	3	24.79	23.80	PASS
		1	5	24.58	23.80	PASS
		3	0	24.90	24.02	PASS
		3	2	24.81	23.96	PASS
		3	3	24.70	23.85	PASS
		6	0	23.95	23.25	PASS

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Conducted Output Power Test Result (Channel Bandwidth: 3 MHz)						
Modulation	Channel	RB Configuration		Average Power [dBm]	Average Power [dBm]	Verdict
		Size	Offset	QPSK	16QAM	
QPSK / 16QAM	LCH	1	0	22.40	21.65	PASS
		1	7	22.22	21.58	PASS
		1	14	21.92	21.20	PASS
		8	0	22.28	21.39	PASS
		8	4	22.15	21.27	PASS
		8	7	21.97	21.08	PASS
		15	0	22.12	21.15	PASS
	MCH	1	0	23.43	22.68	PASS
		1	7	24.10	23.40	PASS
		1	14	23.98	23.26	PASS
		8	0	23.18	22.21	PASS
		8	4	23.33	22.38	PASS
		8	7	23.44	22.37	PASS
		15	0	23.31	22.42	PASS
	HCH	1	0	24.59	23.96	PASS
		1	7	25.04	23.97	PASS
		1	14	24.50	23.93	PASS
		8	0	24.02	22.95	PASS
		8	4	23.99	23.01	PASS
		8	7	23.95	22.91	PASS
		15	0	23.94	23.12	PASS

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Conducted Output Power Test Result (Channel Bandwidth: 5 MHz)						
Modulation	Channel	RB Configuration		Average Power [dBm]	Average Power [dBm]	Verdict
		Size	Offset	QPSK	16QAM	
QPSK / 16QAM	LCH	1	0	22.25	21.65	PASS
		1	12	22.05	21.50	PASS
		1	24	21.92	21.37	PASS
		12	0	22.11	21.28	PASS
		12	6	21.92	21.10	PASS
		12	13	21.76	20.94	PASS
		25	0	21.92	20.98	PASS
	MCH	1	0	22.84	22.27	PASS
		1	12	24.07	23.50	PASS
		1	24	23.70	23.13	PASS
		12	0	23.05	22.23	PASS
		12	6	23.37	22.47	PASS
		12	13	23.34	22.41	PASS
		25	0	23.22	22.48	PASS
	HCH	1	0	23.63	22.65	PASS
		1	12	24.82	23.84	PASS
		1	24	24.44	23.21	PASS
		12	0	23.67	22.72	PASS
		12	6	23.90	23.06	PASS
		12	13	23.88	23.10	PASS
		25	0	23.86	22.91	PASS

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Conducted Output Power Test Result (Channel Bandwidth: 10 MHz)						
Modulation	Channel	RB Configuration		Average Power [dBm]	Average Power [dBm]	Verdict
		Size	Offset	QPSK	16QAM	
QPSK / 16QAM	LCH	1	0	22.57	21.87	PASS
		1	24	22.34	21.66	PASS
		1	49	23.28	22.59	PASS
		25	0	22.71	21.73	PASS
		25	12	22.39	21.39	PASS
		25	25	23.17	22.20	PASS
		50	0	22.47	21.50	PASS
	MCH	1	0	23.98	22.30	PASS
		1	24	24.06	23.37	PASS
		1	49	23.13	22.44	PASS
		25	0	22.76	21.75	PASS
		25	12	23.73	22.77	PASS
		25	25	23.40	22.33	PASS
		50	0	23.19	22.22	PASS
	HCH	1	0	22.85	22.44	PASS
		1	24	23.88	23.47	PASS
		1	49	23.97	23.57	PASS
		25	0	23.39	22.39	PASS
		25	12	23.55	22.53	PASS
		25	25	23.78	22.66	PASS
		50	0	23.56	22.59	PASS

E.2 Peak-to-Average Ratio

Peak-to Average Ratio Test Result (Channel Bandwidth: 1.4 MHz)				
Modulation	Channel	Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
QPSK	LCH	5.25	<13	PASS
	MCH	5.36	<13	PASS
	HCH	4.51	<13	PASS
16QAM	LCH	6.12	<13	PASS
	MCH	6.24	<13	PASS
	HCH	5.35	<13	PASS

Peak-to Average Ratio Test Result (Channel Bandwidth: 3 MHz)				
Modulation	Channel	Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
QPSK	LCH	5.68	<13	PASS
	MCH	5.36	<13	PASS
	HCH	4.86	<13	PASS

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16QAM	LCH	6.58	<13	PASS
	MCH	6.28	<13	PASS
	HCH	5.66	<13	PASS

Peak-to Average Ratio Test Result (Channel Bandwidth: 5 MHz)				
Modulation	Channel	Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
QPSK	LCH	5.81	<13	PASS
	MCH	5.3	<13	PASS
	HCH	5.02	<13	PASS
16QAM	LCH	6.95	<13	PASS
	MCH	6.19	<13	PASS
	HCH	5.9	<13	PASS

Peak-to Average Ratio Test Result (Channel Bandwidth: 10 MHz)				
Modulation	Channel	Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
QPSK	LCH	5.5	<13	PASS
	MCH	5.23	<13	PASS
	HCH	5.29	<13	PASS
16QAM	LCH	6.72	<13	PASS
	MCH	6.24	<13	PASS
	HCH	6.14	<13	PASS

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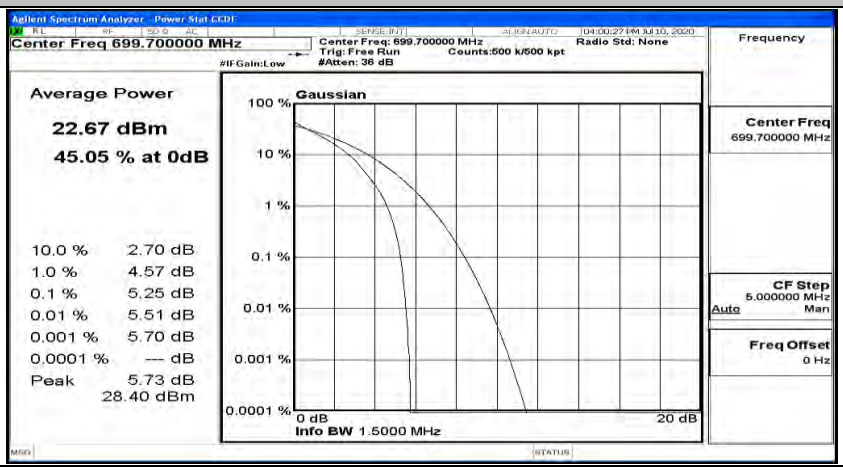
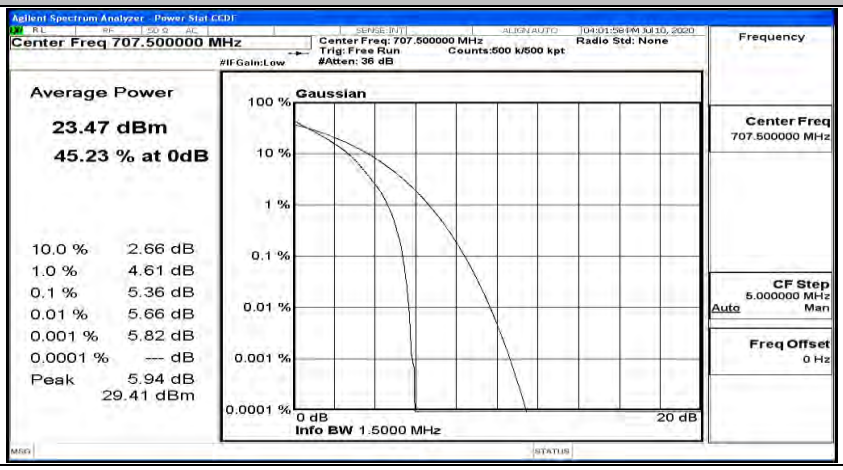
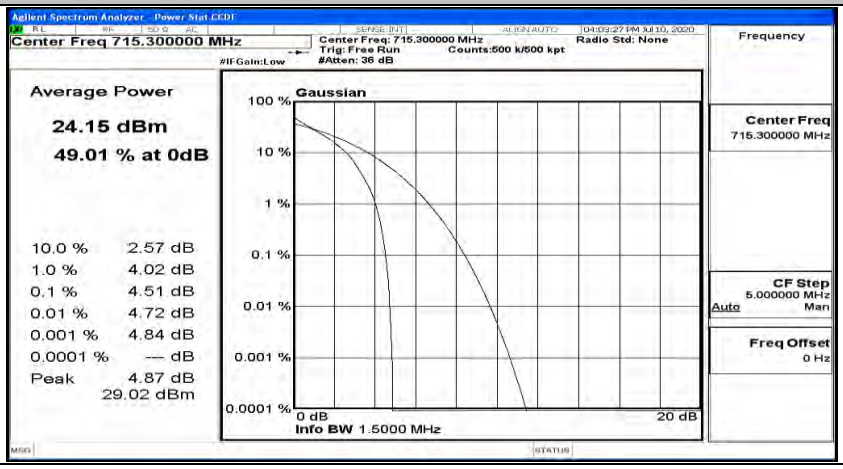
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)_LCH_QPSK



Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)_MCH_QPSK



Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)_HCH_QPSK



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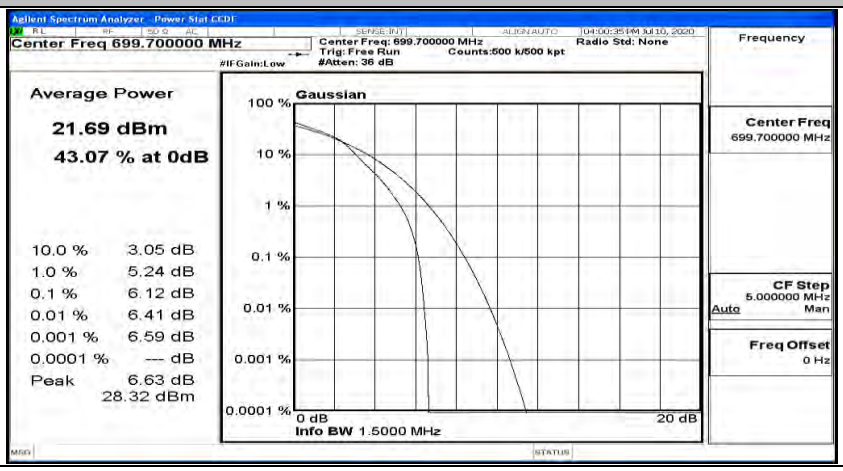
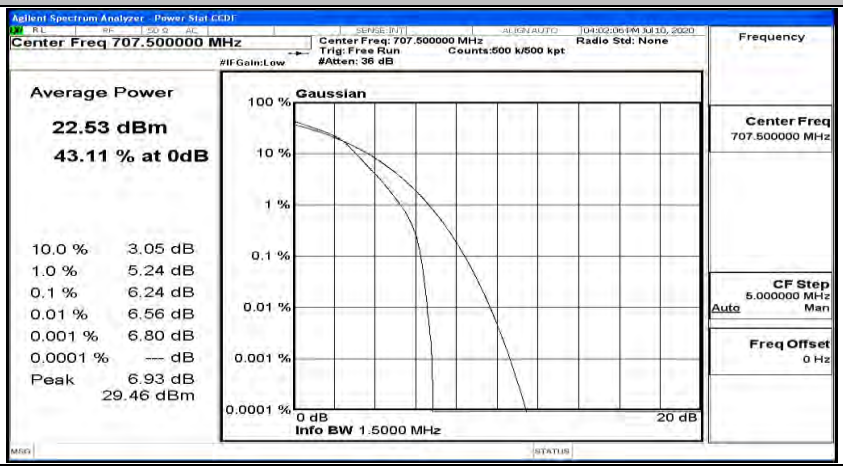
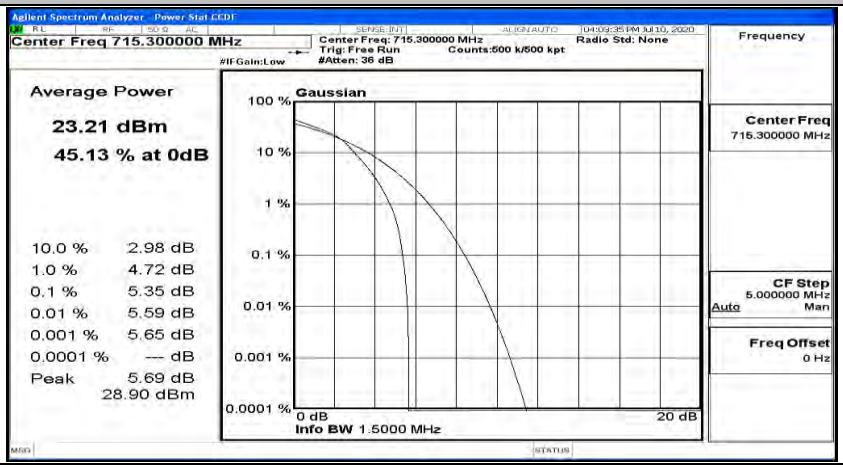
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)_LCH_16QAM



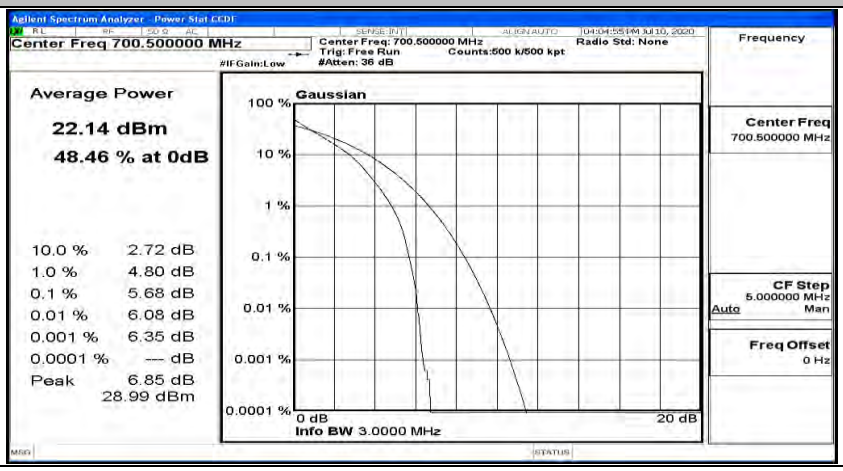
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)_MCH_16QAM



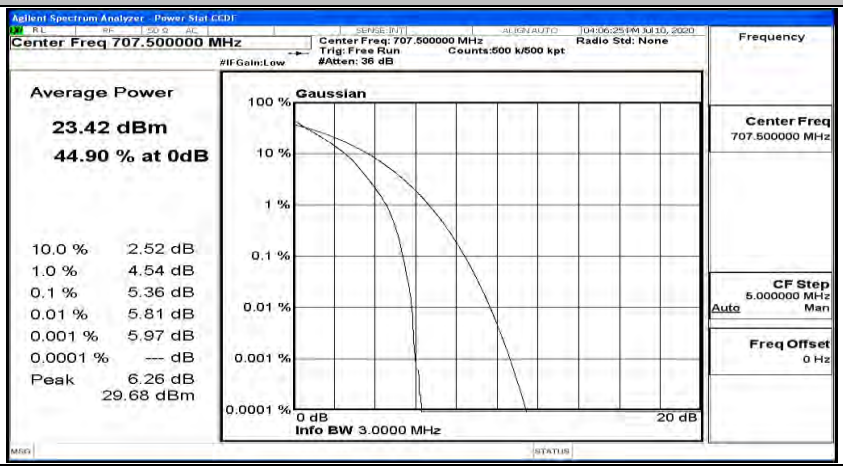
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 1.4 MHz)_HCH_16QAM



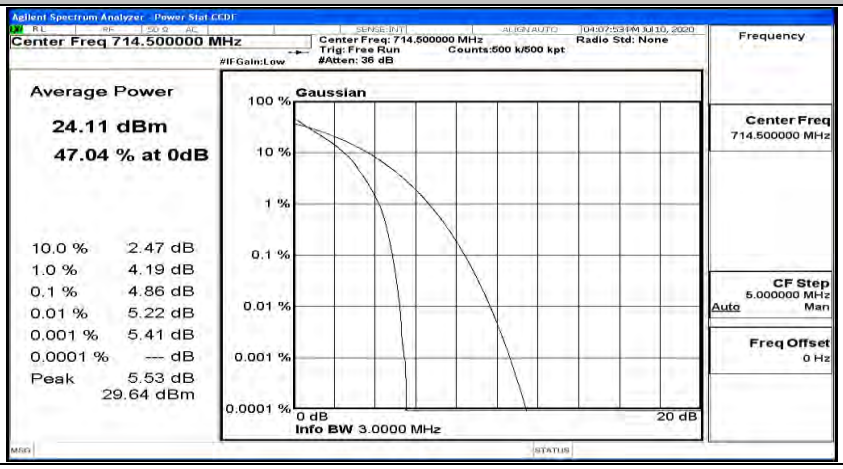
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)_LCH_QPSK



Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)_MCH_QPSK



Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)_HCH_QPSK



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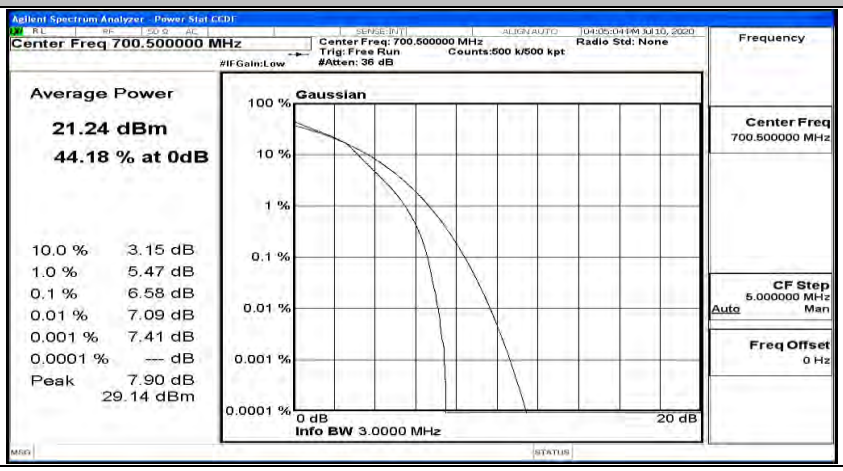
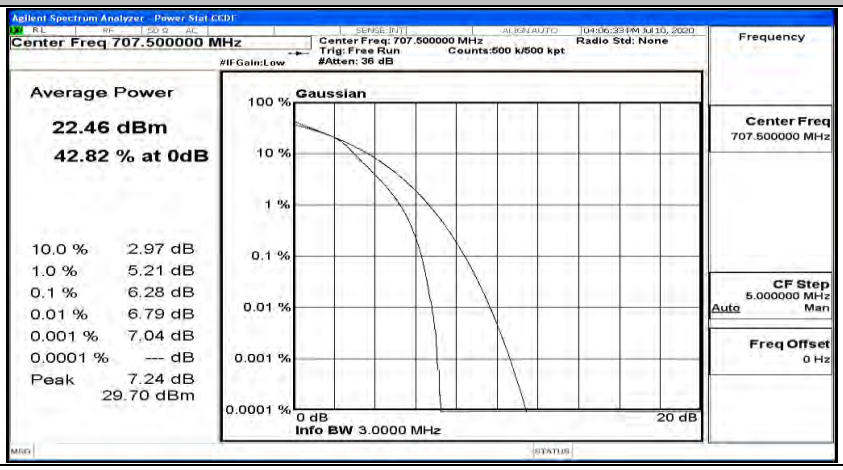
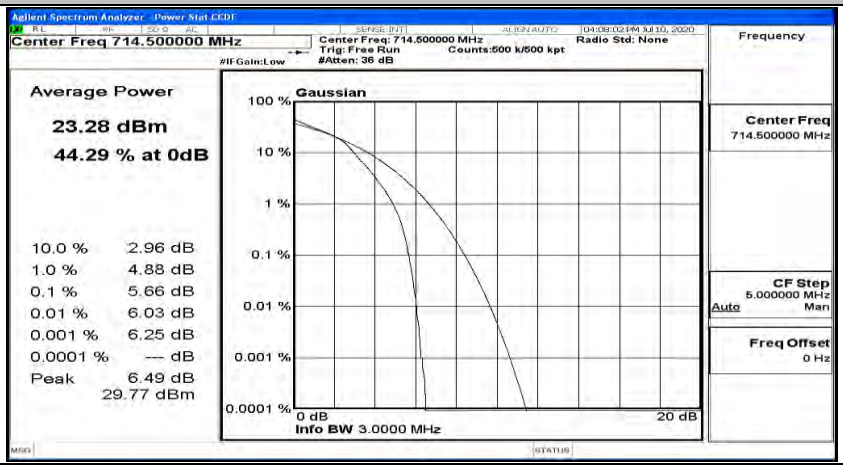
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)_LCH_16QAM



Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)_MCH_16QAM



Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 3 MHz)_HCH_16QAM



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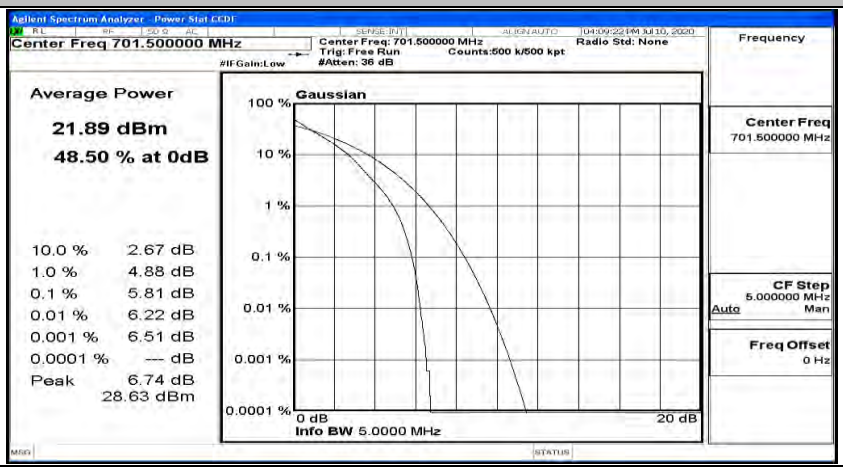
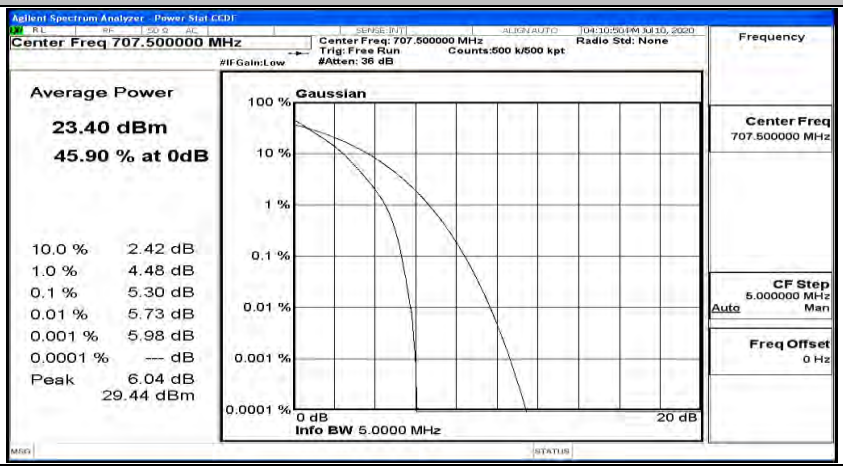
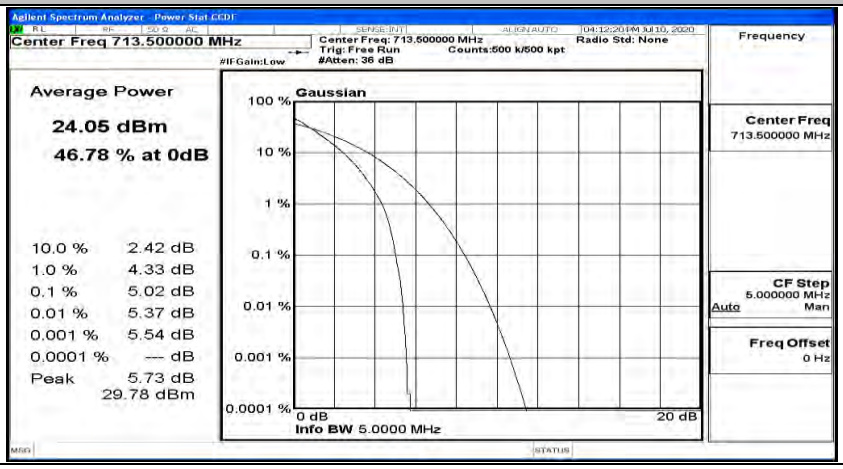
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)_LCH_QPSK



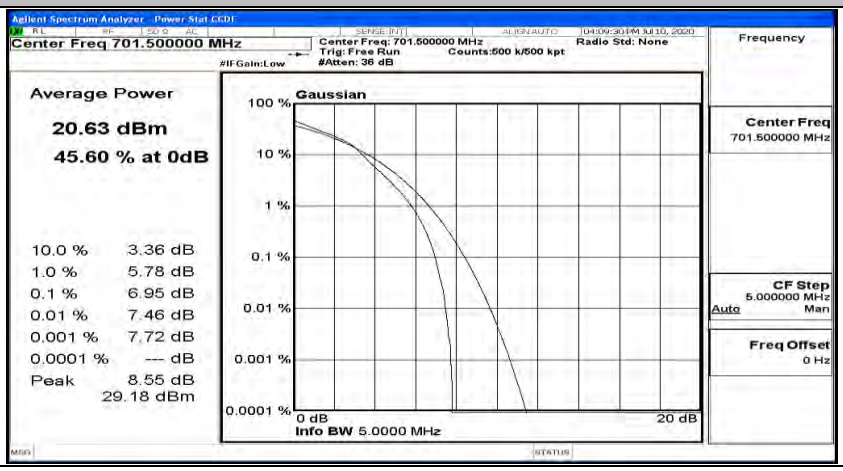
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)_MCH_QPSK



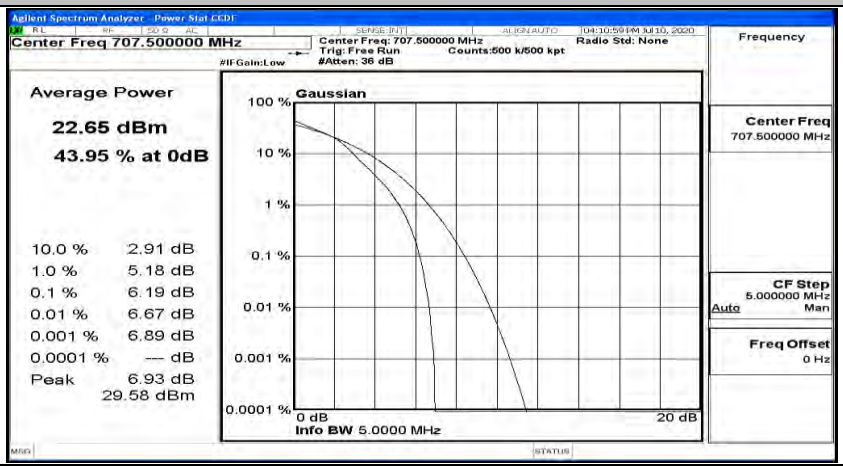
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)_HCH_QPSK



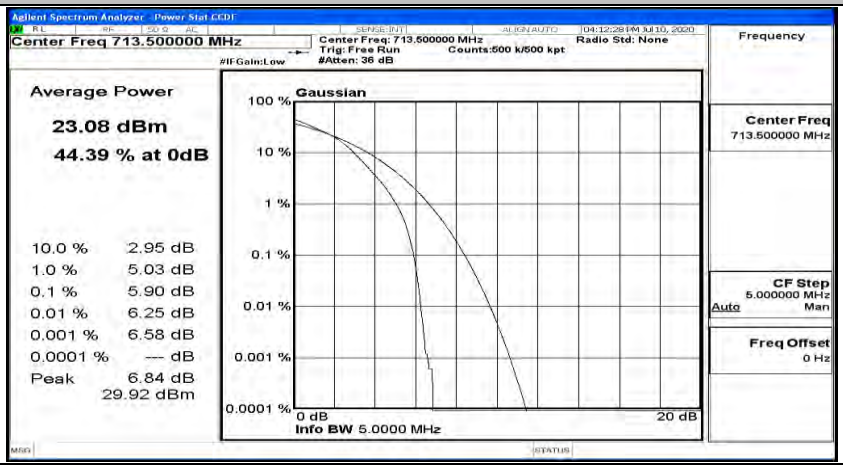
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)_LCH_16QAM



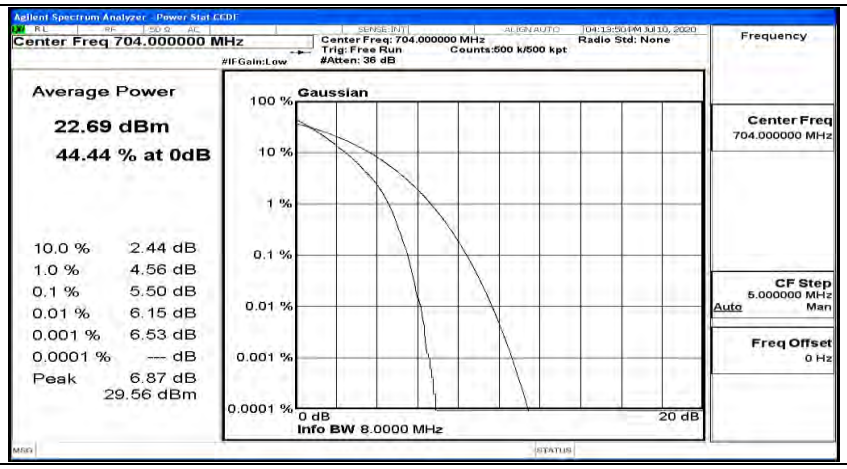
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)_MCH_16QAM



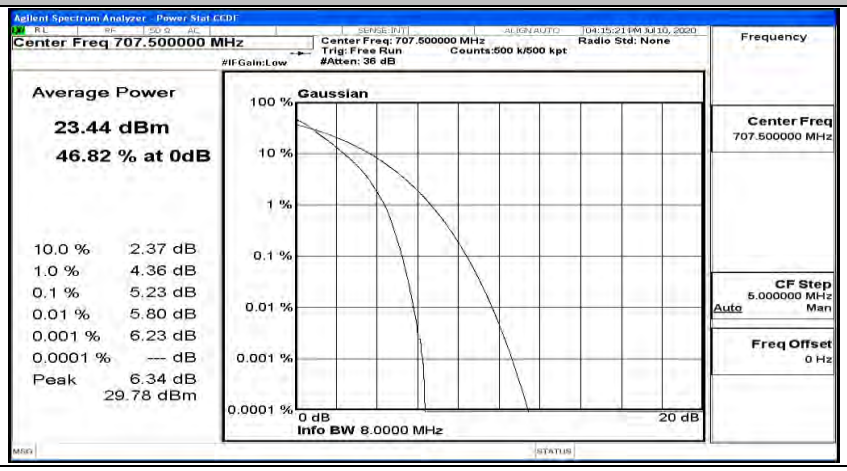
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 5 MHz)_HCH_16QAM



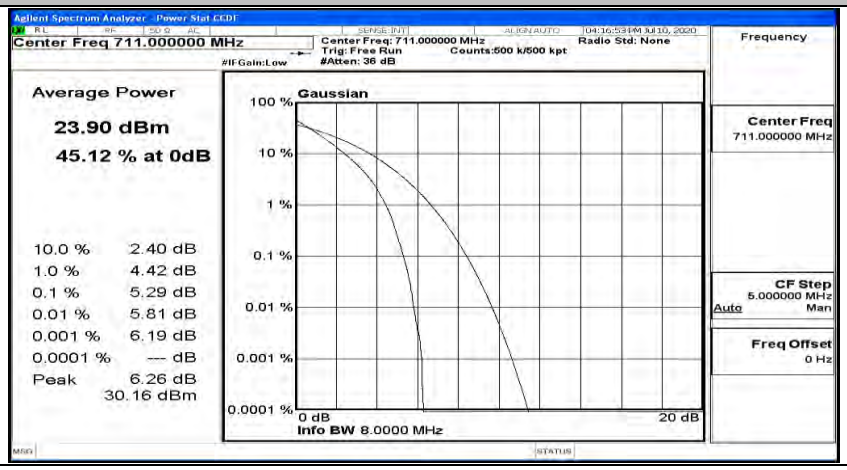
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)_LCH_QPSK



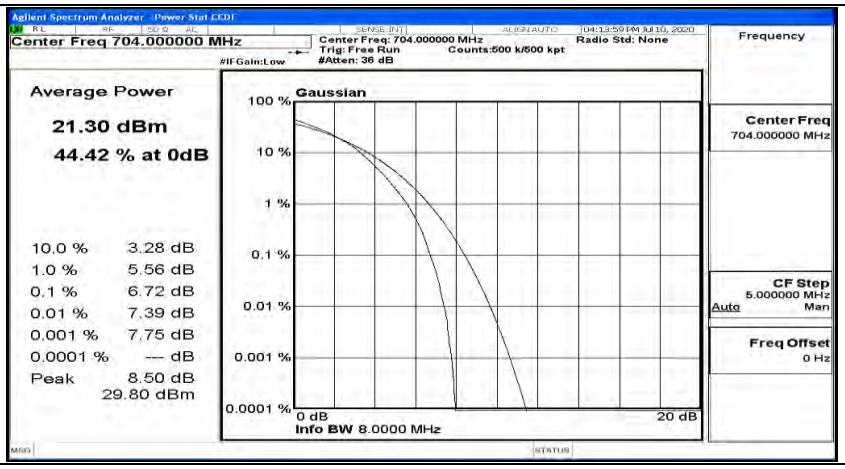
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)_MCH_QPSK



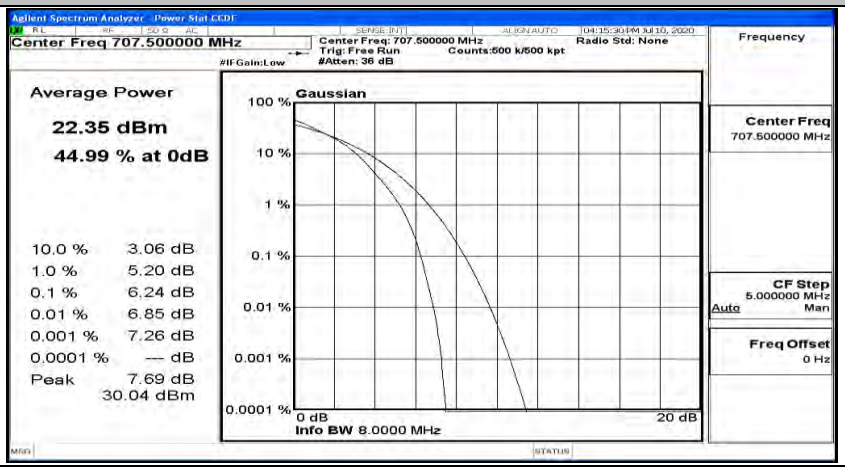
Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)_HCH_QPSK

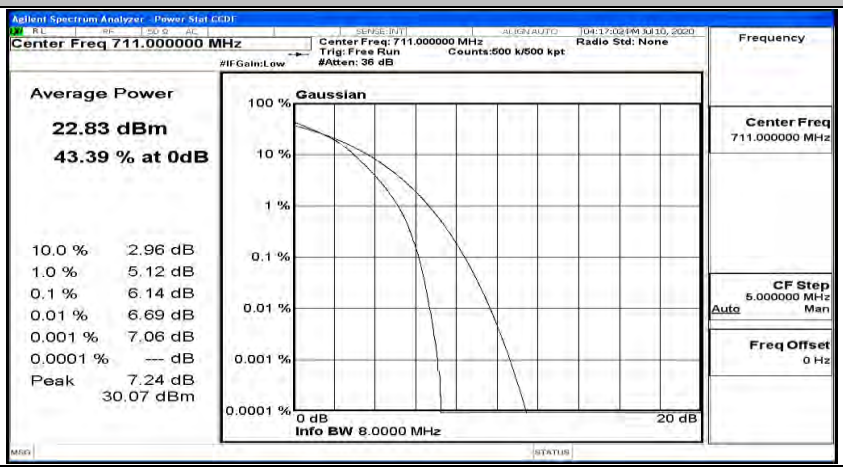


Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)_LCH_16QAM



Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)_MCH_16QAM



Peak-to Average Ratio Test Graph(s) (Channel Bandwidth: 10 MHz)_HCH_16QAM


E.3 26dB Bandwidth and Occupied Bandwidth

EBW & OBW Test Result (Channel Bandwidth: 1.4 MHz)				
Modulation	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
QPSK	LCH	1.0797	1.222	PASS
	MCH	1.0739	1.227	PASS
	HCH	1.0776	1.239	PASS
16QAM	LCH	1.0770	1.225	PASS
	MCH	1.0799	1.233	PASS
	HCH	1.0755	1.247	PASS

EBW & OBW Test Result (Channel Bandwidth: 3 MHz)				
Modulation	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
QPSK	LCH	2.6863	2.886	PASS
	MCH	2.6843	2.904	PASS
	HCH	2.6783	2.890	PASS
16QAM	LCH	2.6834	2.878	PASS
	MCH	2.6834	2.901	PASS
	HCH	2.6822	2.880	PASS

EBW & OBW Test Result (Channel Bandwidth: 5 MHz)				
Modulation	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
QPSK	LCH	4.4717	4.770	PASS
	MCH	4.4787	4.817	PASS

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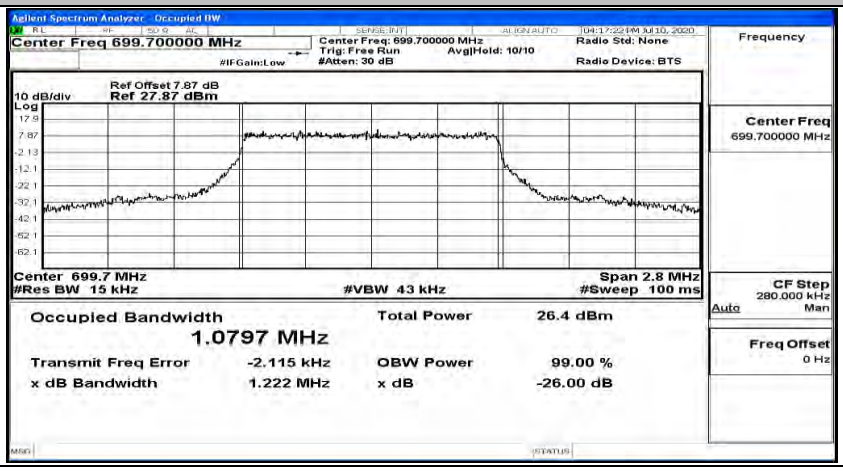
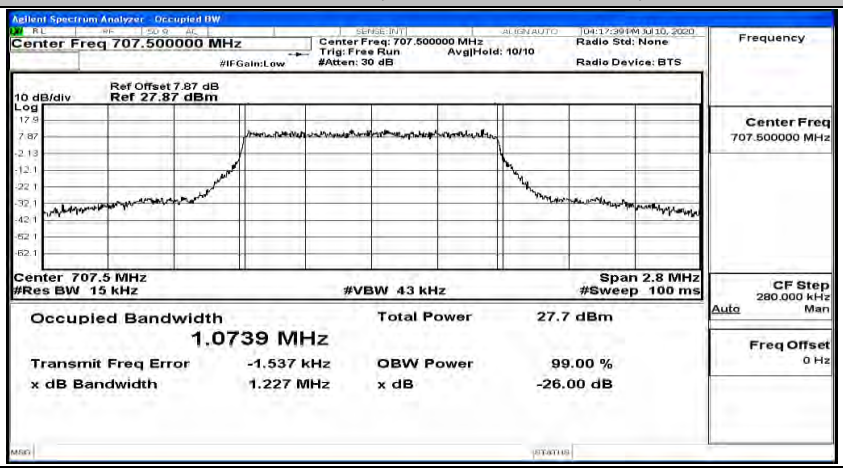
	HCH	4.4694	4.779	PASS
16QAM	LCH	4.4761	4.828	PASS
	MCH	4.4632	4.802	PASS
	HCH	4.4737	4.820	PASS

EBW & OBW Test Result (Channel Bandwidth: 10 MHz)				
Modulation	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
QPSK	LCH	8.9379	9.488	PASS
	MCH	8.8988	9.414	PASS
	HCH	8.9169	9.392	PASS
16QAM	LCH	8.9349	9.415	PASS
	MCH	8.9075	9.364	PASS
	HCH	8.9295	9.393	PASS

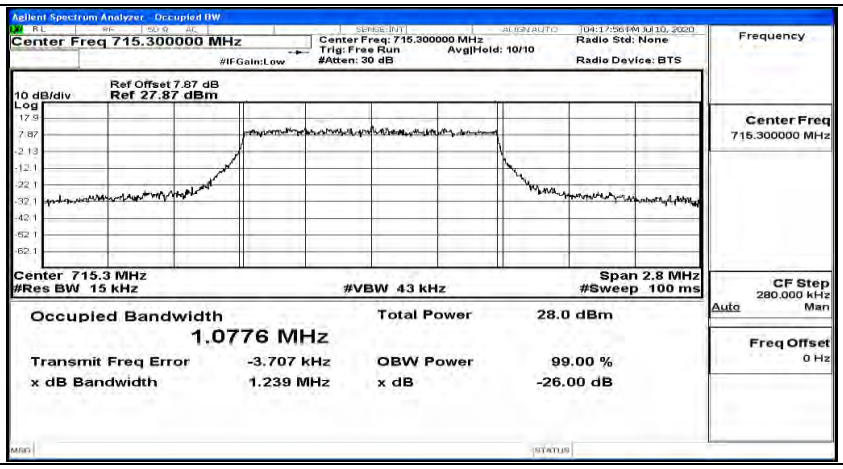
EBW & OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)_LCH_QPSK



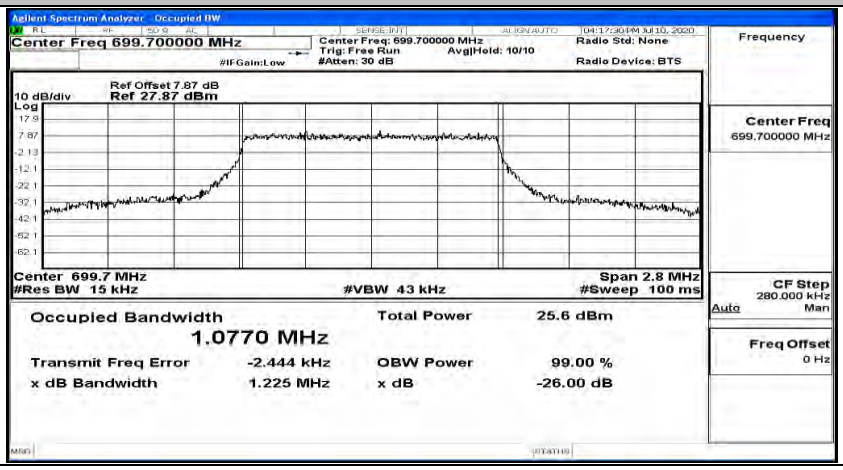
EBW & OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)_MCH_QPSK



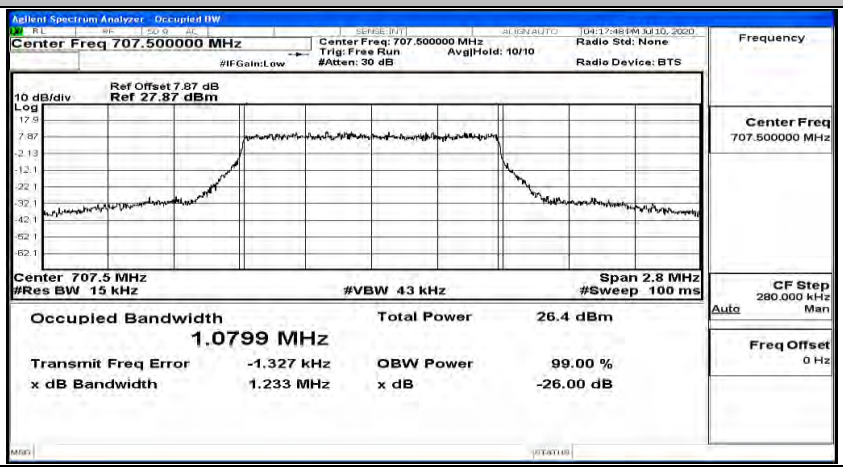
EBW & OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)_HCH_QPSK



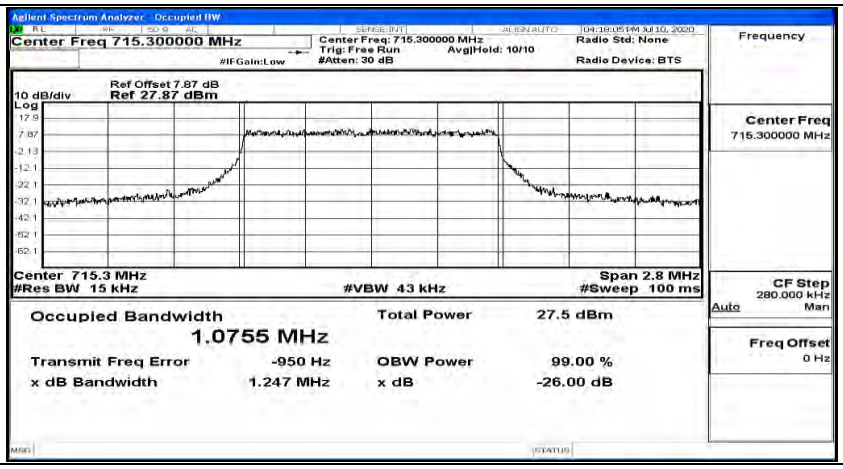
EBW & OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)_LCH_16QAM



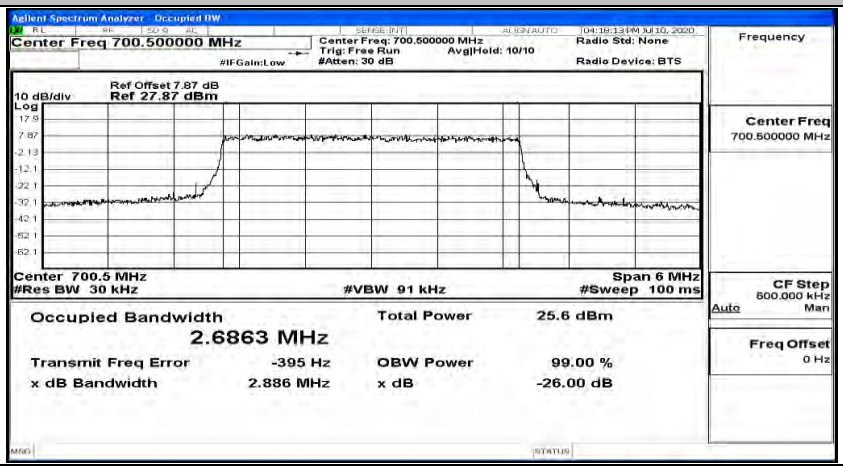
EBW & OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)_MCH_16QAM



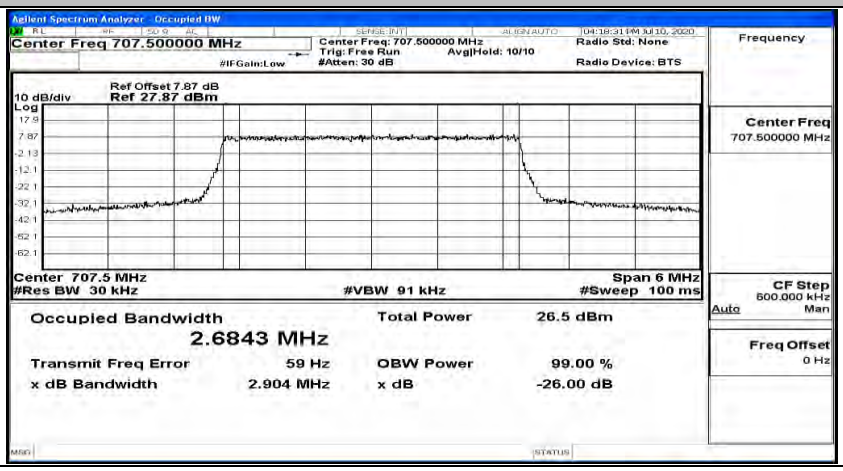
EBW & OBW Test Graph(s) (Channel Bandwidth: 1.4 MHz)_HCH_16QAM



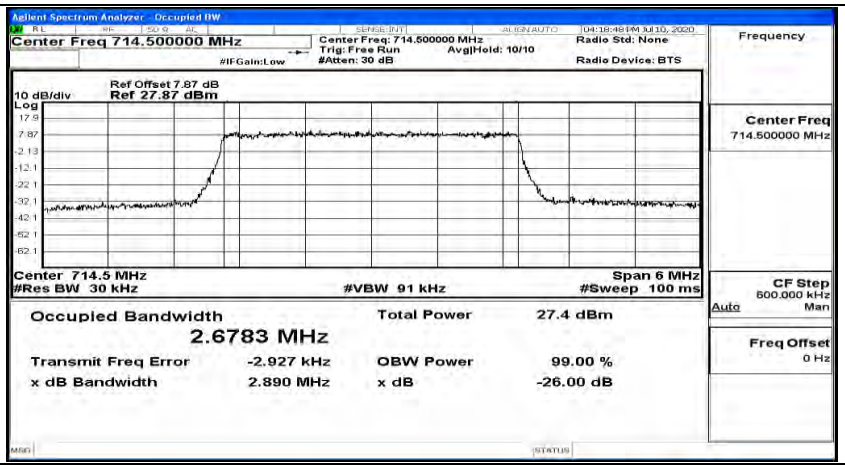
EBW & OBW Test Graph(s) (Channel Bandwidth: 3 MHz)_LCH_QPSK



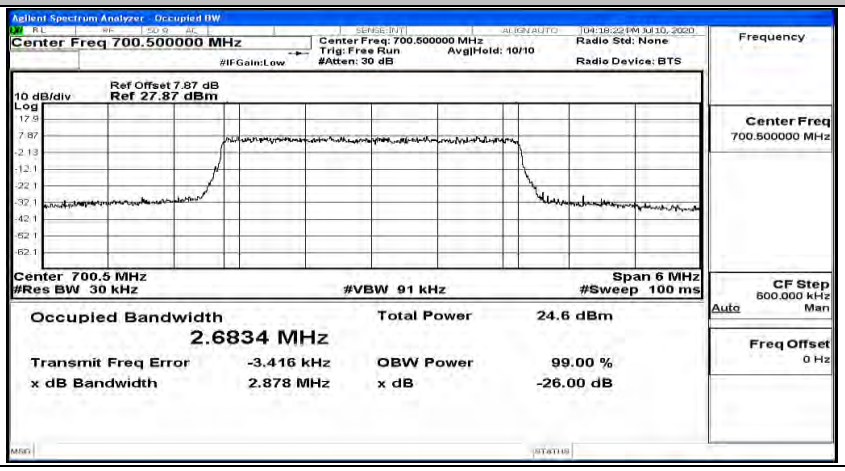
EBW & OBW Test Graph(s) (Channel Bandwidth: 3 MHz)_MCH_QPSK



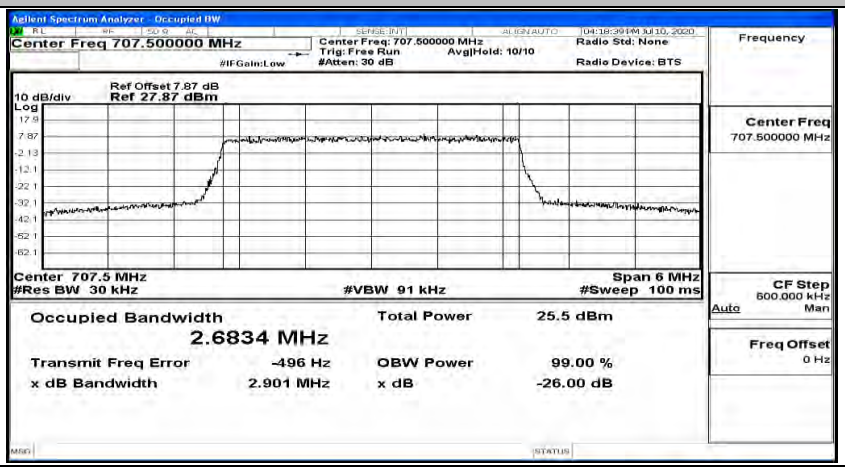
EBW & OBW Test Graph(s) (Channel Bandwidth: 3 MHz)_HCH_QPSK



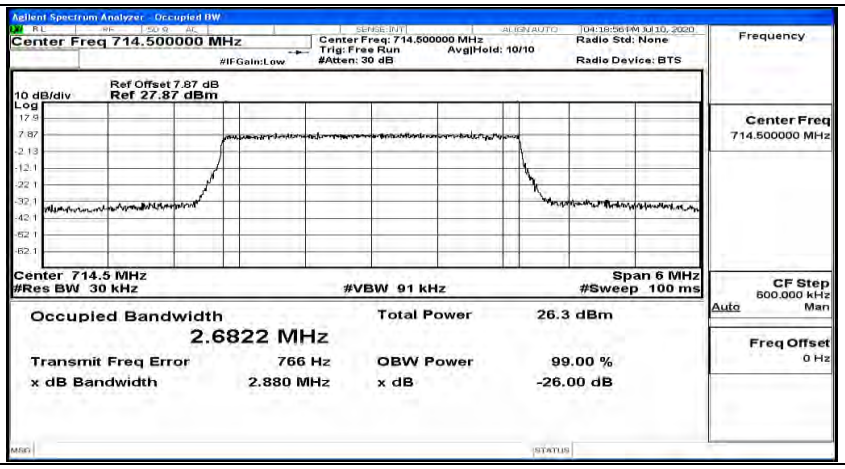
EBW & OBW Test Graph(s) (Channel Bandwidth: 3 MHz)_LCH_16QAM



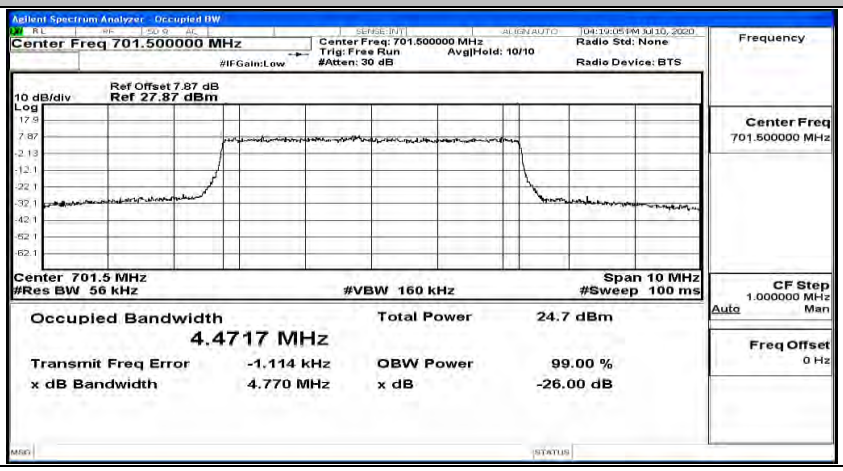
EBW & OBW Test Graph(s) (Channel Bandwidth: 3 MHz)_MCH_16QAM



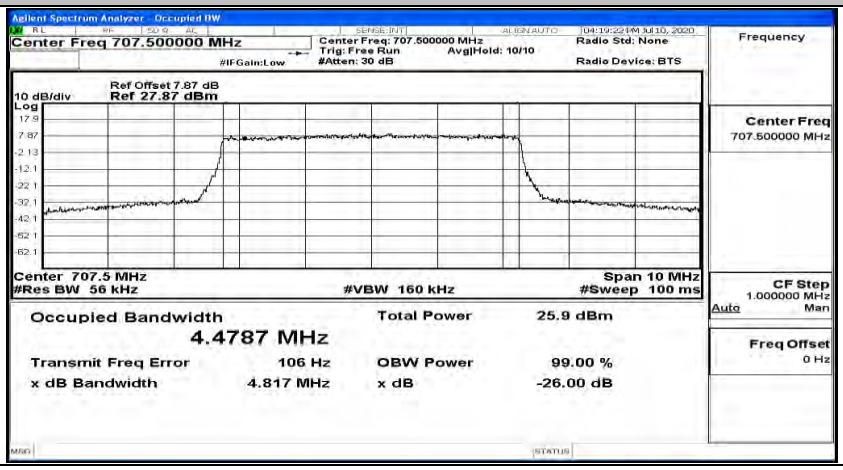
EBW & OBW Test Graph(s) (Channel Bandwidth: 3 MHz)_HCH_16QAM


Agilent Spectrum Analyzer - Occupied BW
Center Freq 714.500000 MHz
Center Freq: 714.500000 MHz
Trig: Free Run
Avg|Hold: 10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 7.87 dB
10 dB/div
Ref 27.87 dBm
Log
17.9
7.87
-2.13
-12.1
-22.1
-32.1
-42.1
-52.1
-62.1
Center 714.5 MHz
#Res BW 30 kHz
#VBW 91 kHz
Span 6 MHz
#Sweep 100 ms
Center Freq
714.500000 MHz
CF Step
600.000 kHz
Auto
Man
Freq Offset
0 Hz
Occupied Bandwidth
2.6822 MHz
Total Power
26.3 dBm
Transmit Freq Error
766 Hz
OBW Power
99.00 %
x dB Bandwidth
2.880 MHz
x dB
-26.00 dB
MSG
STATUS

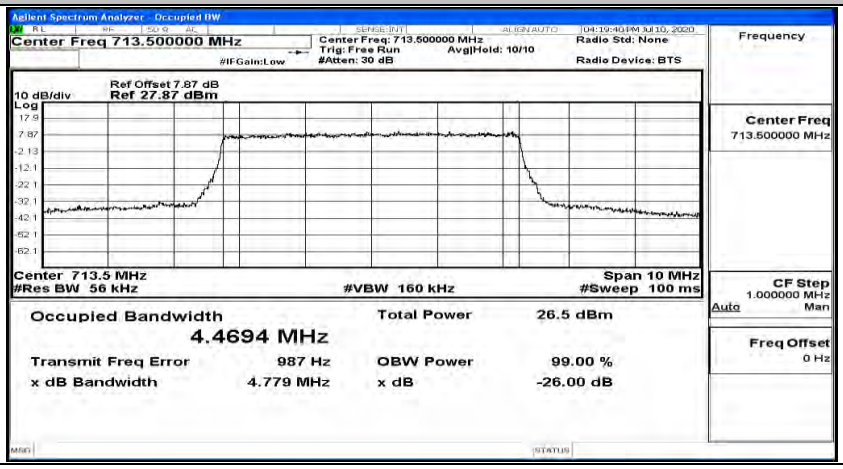
EBW & OBW Test Graph(s) (Channel Bandwidth: 5 MHz)_LCH_QPSK



EBW & OBW Test Graph(s) (Channel Bandwidth: 5 MHz)_MCH_QPSK



EBW & OBW Test Graph(s) (Channel Bandwidth: 5 MHz)_HCH_QPSK



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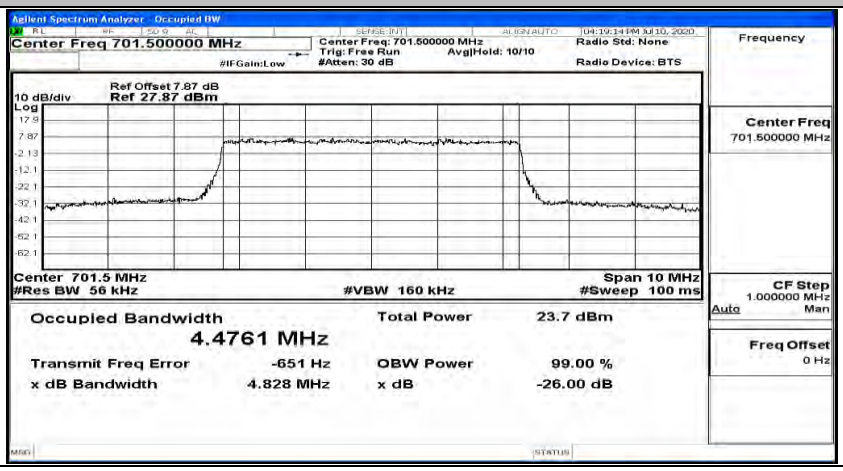
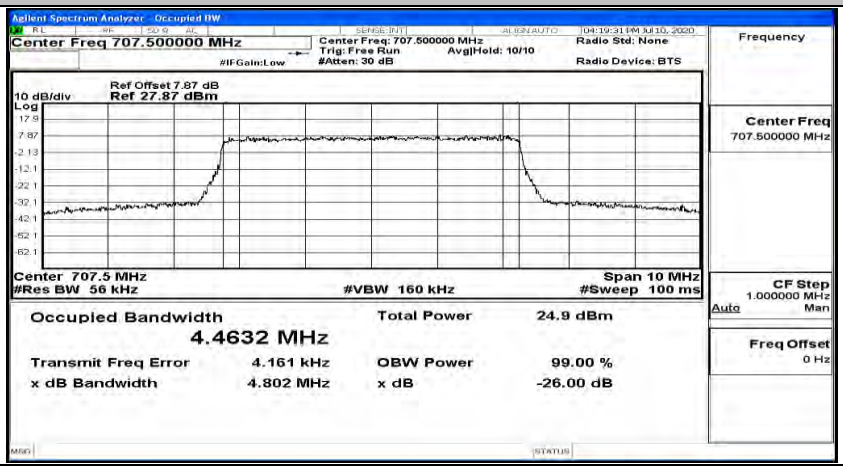
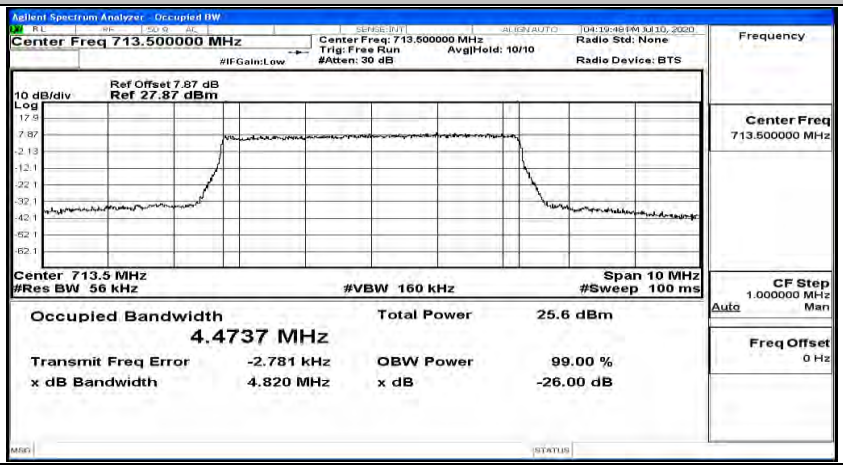
EBW & OBW Test Graph(s) (Channel Bandwidth: 5 MHz)_LCH_16QAM



EBW & OBW Test Graph(s) (Channel Bandwidth: 5 MHz)_MCH_16QAM



EBW & OBW Test Graph(s) (Channel Bandwidth: 5 MHz)_HCH_16QAM



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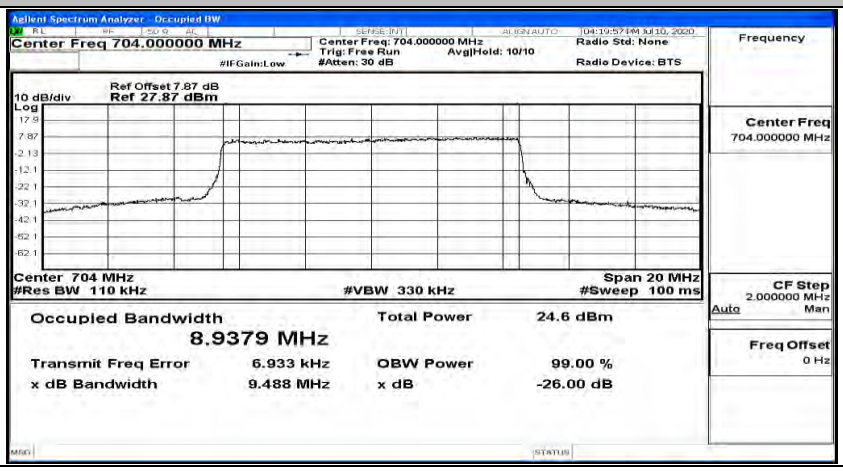
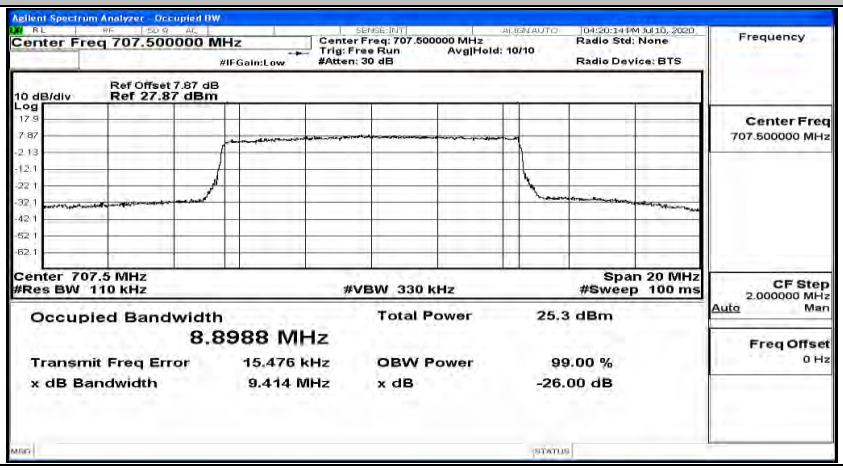
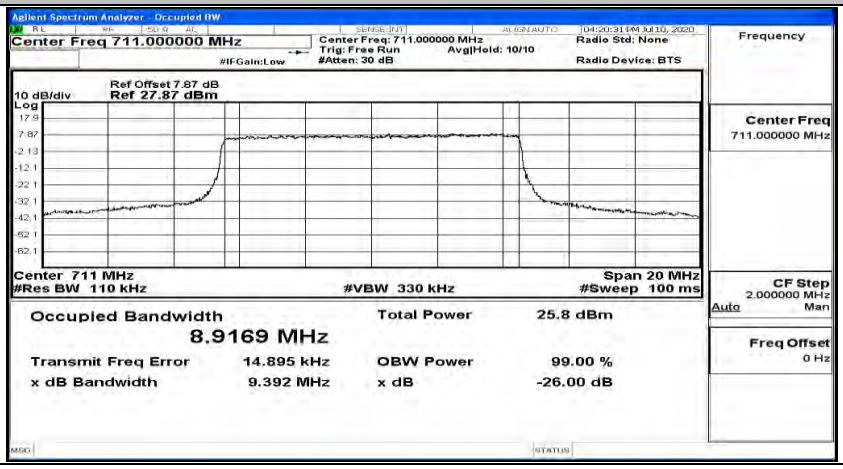
EBW & OBW Test Graph(s) (Channel Bandwidth: 10 MHz)_LCH_QPSK



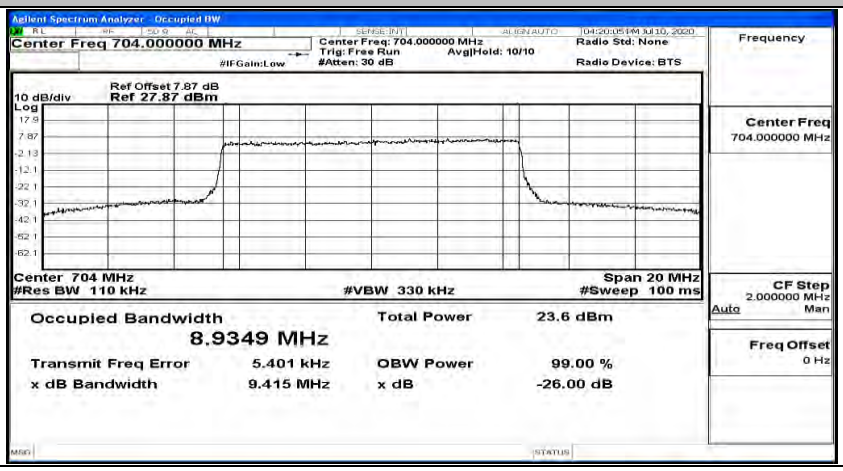
EBW & OBW Test Graph(s) (Channel Bandwidth: 10 MHz)_MCH_QPSK



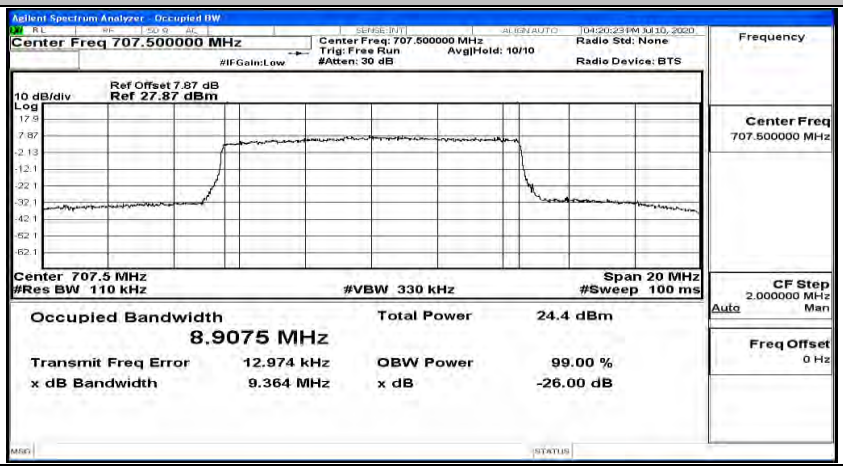
EBW & OBW Test Graph(s) (Channel Bandwidth: 10 MHz)_HCH_QPSK



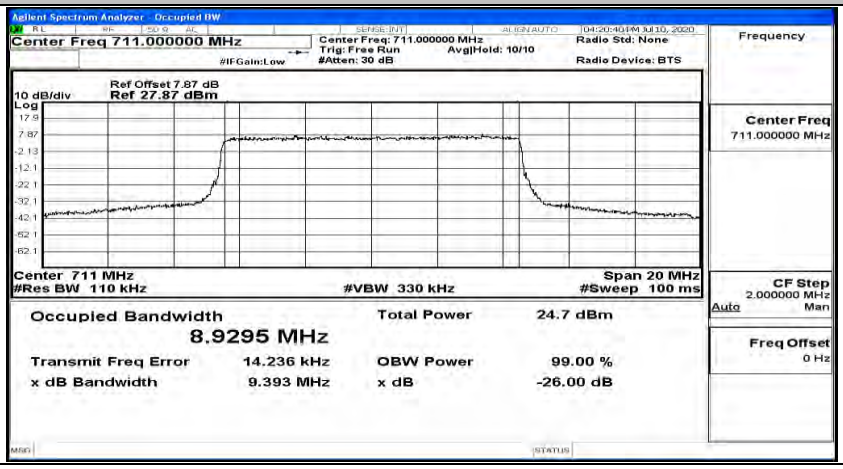
EBW & OBW Test Graph(s) (Channel Bandwidth: 10 MHz)_LCH_16QAM



EBW & OBW Test Graph(s) (Channel Bandwidth: 10 MHz)_MCH_16QAM



EBW & OBW Test Graph(s) (Channel Bandwidth: 10 MHz)_HCH_16QAM



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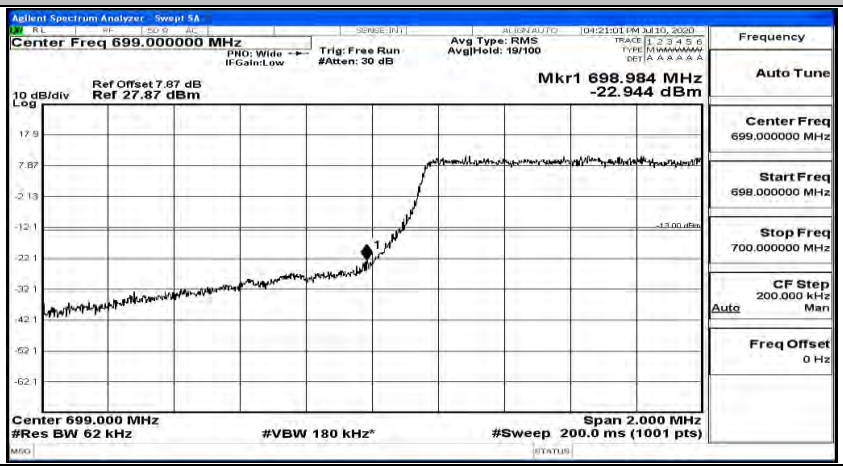
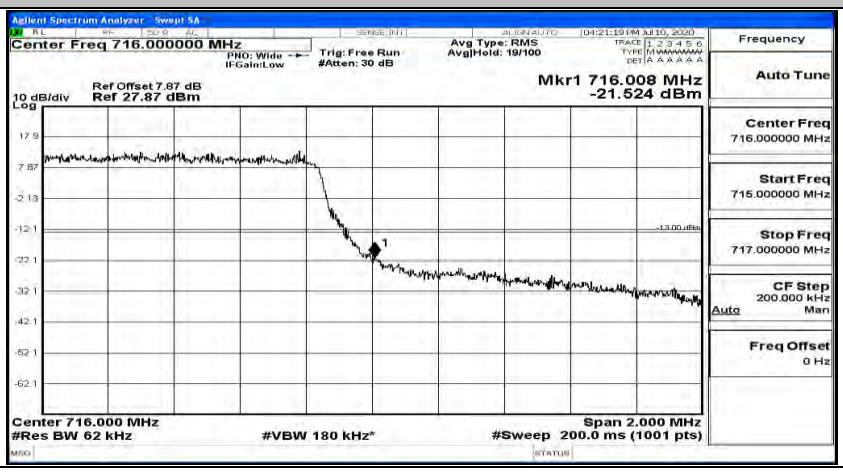
E.4 Band Edge

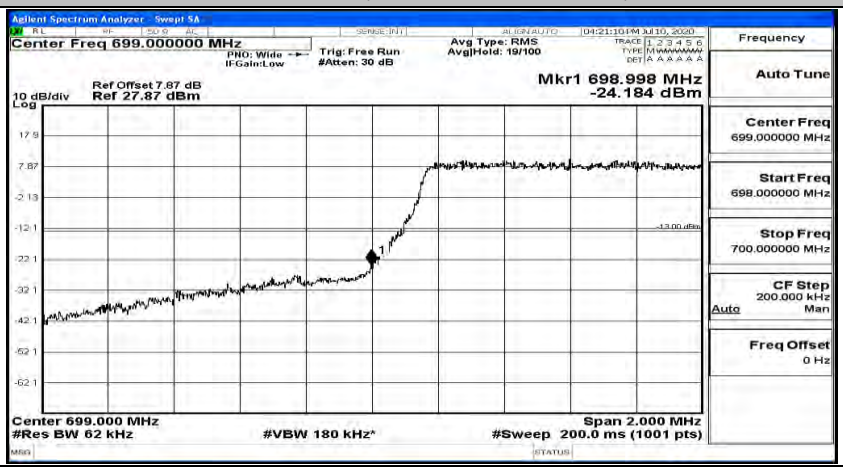
Band Edge Test Graph(s) (Channel Bandwidth: 1.4 MHz)_LCH_QPSK



Band Edge Test Graph(s) (Channel Bandwidth: 1.4 MHz)_HCH_QPSK



Band Edge Test Graph(s) (Channel Bandwidth: 1.4 MHz)_LCH_16QAM



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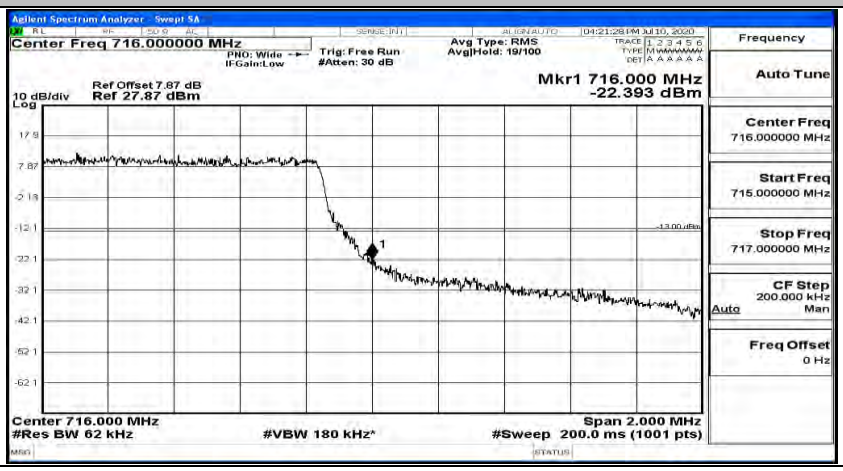
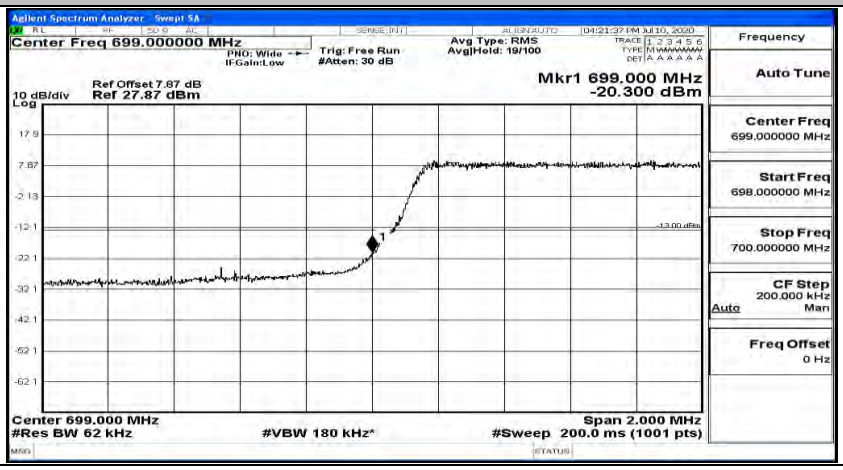
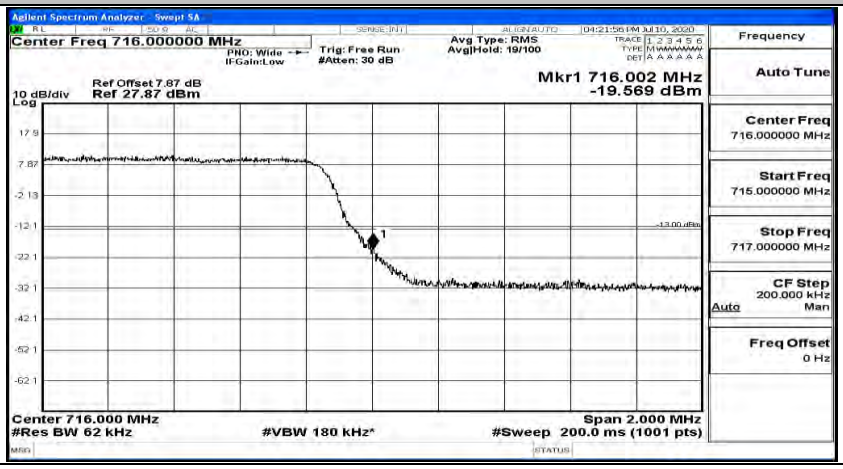
Band Edge Test Graph(s) (Channel Bandwidth: 1.4 MHz)_HCH_16QAM



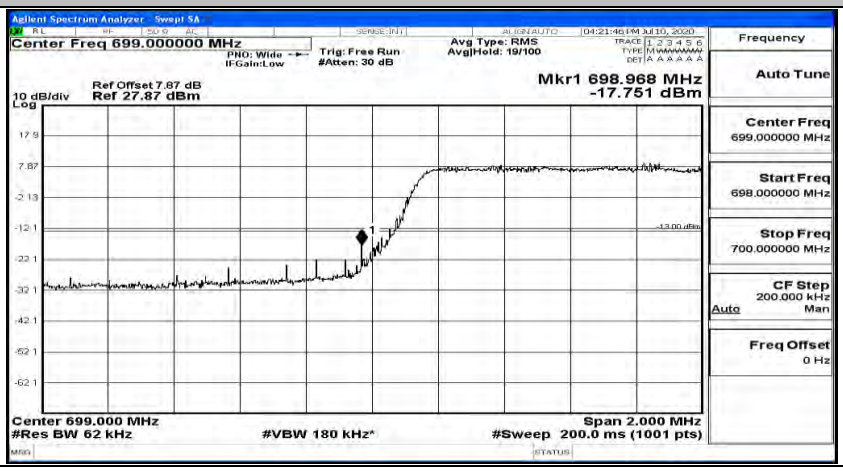
Band Edge Test Graph(s) (Channel Bandwidth: 3 MHz)_LCH_QPSK



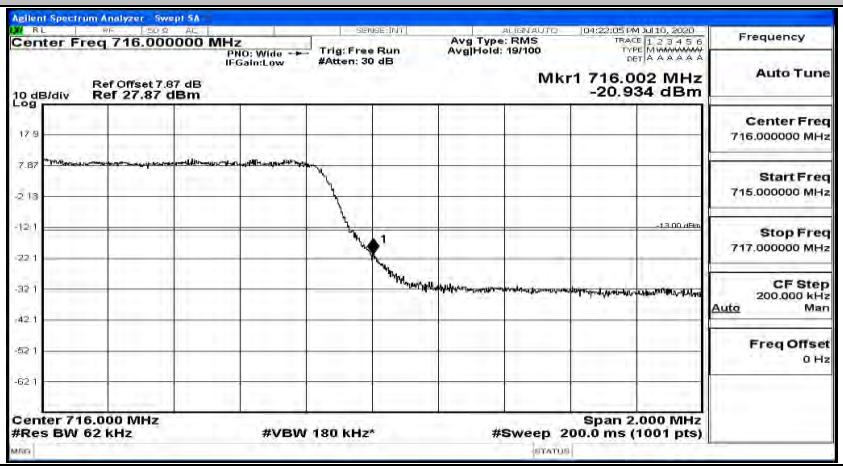
Band Edge Test Graph(s) (Channel Bandwidth: 3 MHz)_HCH_QPSK



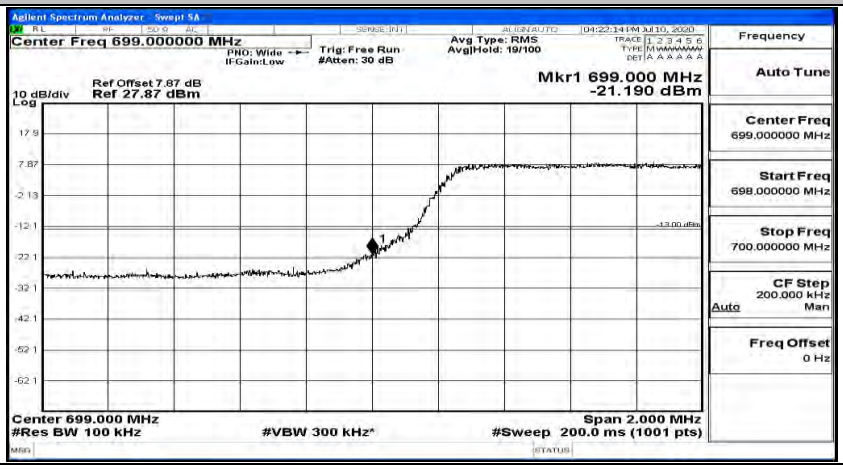
Band Edge Test Graph(s) (Channel Bandwidth: 3 MHz)_LCH_16QAM



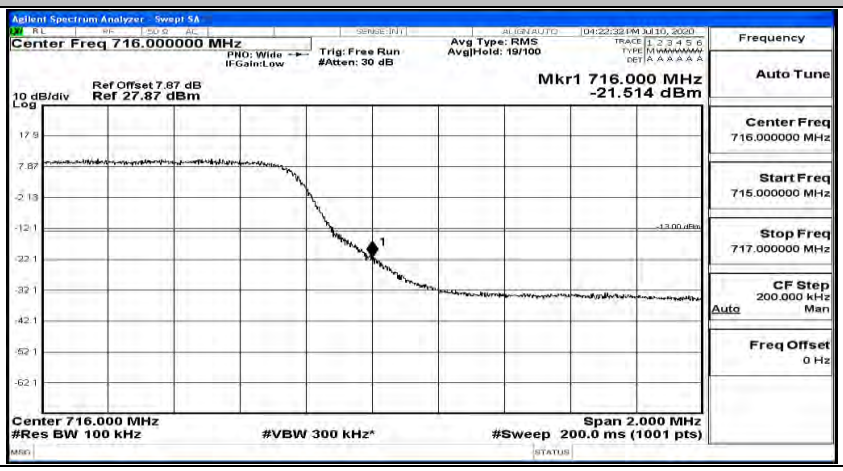
Band Edge Test Graph(s) (Channel Bandwidth: 3 MHz)_HCH_16QAM



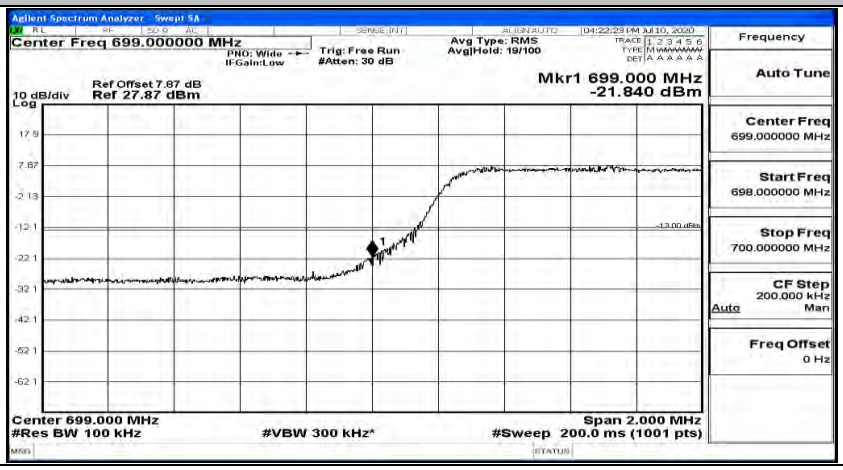
Band Edge Test Graph(s) (Channel Bandwidth: 5 MHz)_LCH_QPSK



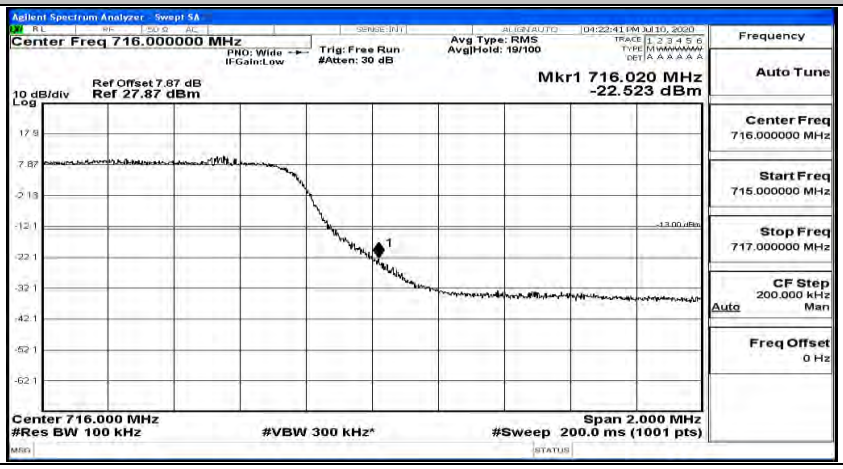
Band Edge Test Graph(s) (Channel Bandwidth: 5 MHz)_HCH_QPSK



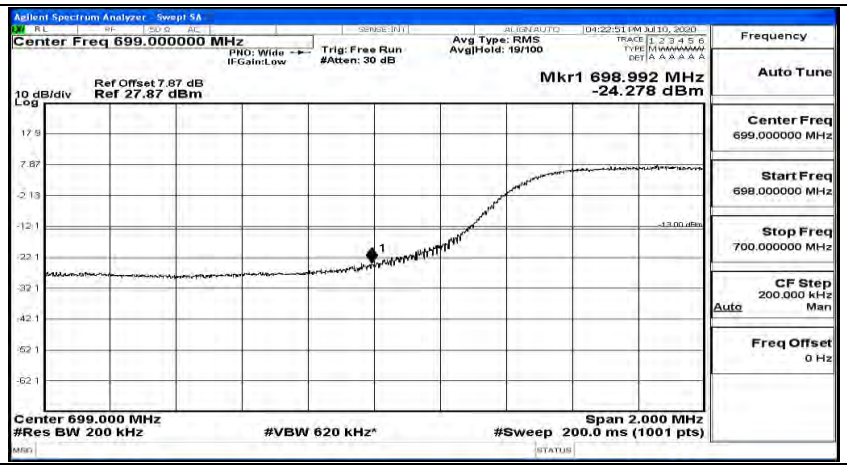
Band Edge Test Graph(s) (Channel Bandwidth: 5 MHz)_LCH_16QAM



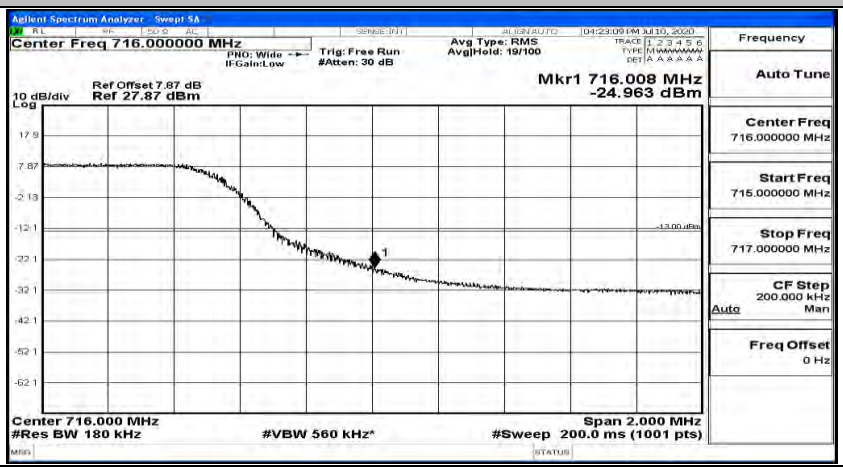
Band Edge Test Graph(s) (Channel Bandwidth: 5 MHz)_HCH_16QAM



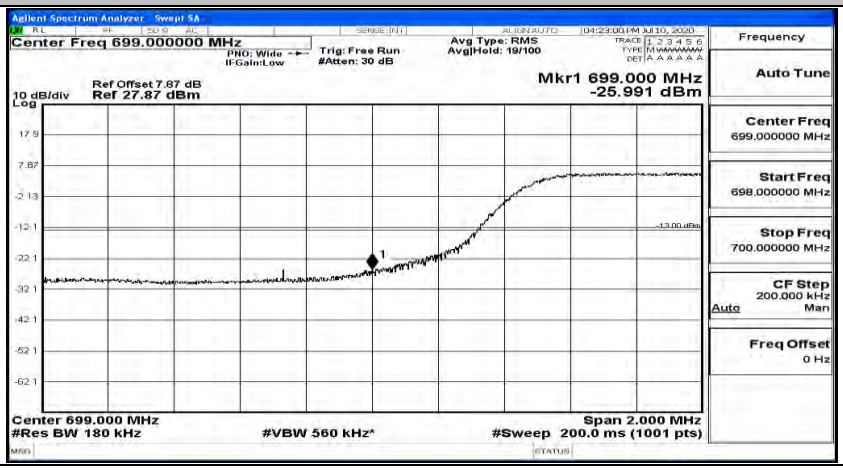
Band Edge Test Graph(s) (Channel Bandwidth: 10 MHz)_LCH_QPSK


Agilent Spectrum Analyzer - Swept SA
Center Freq 699.000000 MHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold: 19/100
04:22:51 PM Jul 10, 2020
Mkr1 698.992 MHz
-24.278 dBm
Ref Offset 7.87 dB
10 dB/div
Log
Ref 27.87 dBm
17.9
7.87
-2.13
-12.1
-22.1
-32.1
-42.1
-52.1
-62.1
-13.00 dBm
Center 699.000 MHz
#Res BW 200 kHz
#VBW 620 kHz*
Span 2.000 MHz
#Sweep 200.0 ms (1001 pts)
Frequency
Auto Tune
Center Freq
699.000000 MHz
Start Freq
698.000000 MHz
Stop Freq
700.000000 MHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

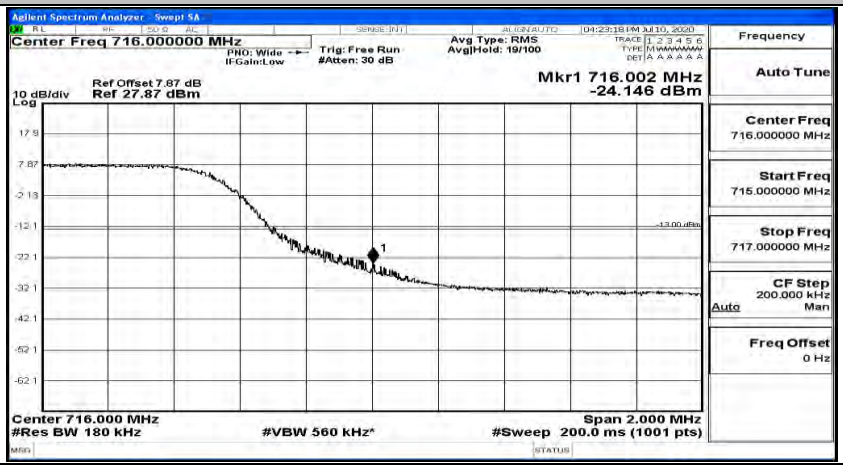
Band Edge Test Graph(s) (Channel Bandwidth: 10 MHz)_HCH_QPSK



Band Edge Test Graph(s) (Channel Bandwidth: 10 MHz)_LCH_16QAM



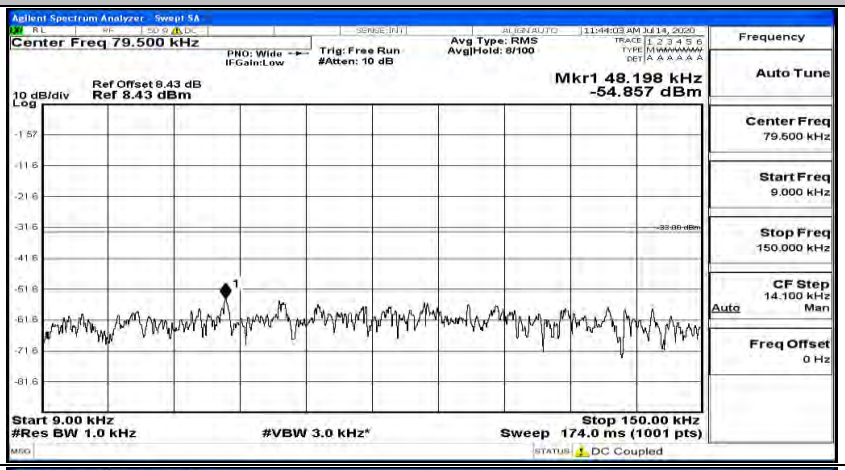
Band Edge Test Graph(s) (Channel Bandwidth: 10 MHz)_HCH_16QAM

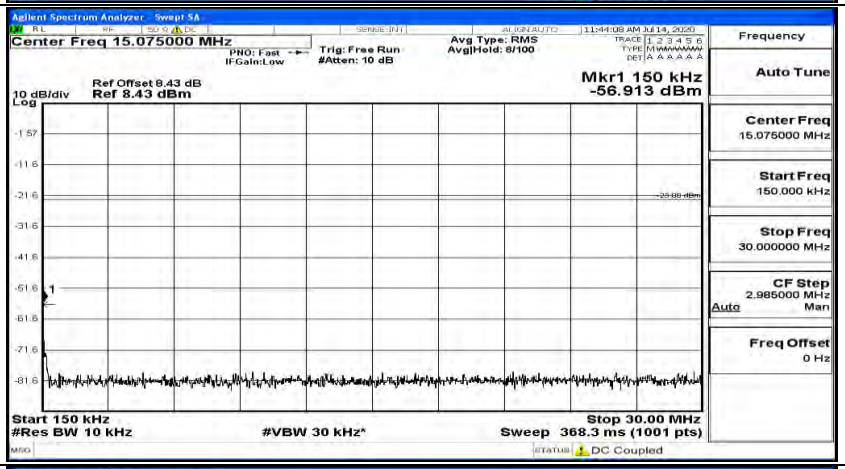


E.5 Conducted Spurious Emission

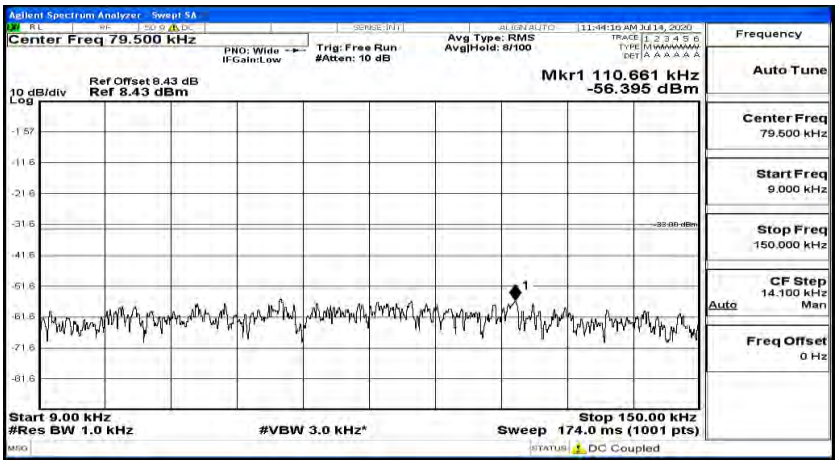
Channel Bandwidth: 1.4 MHz

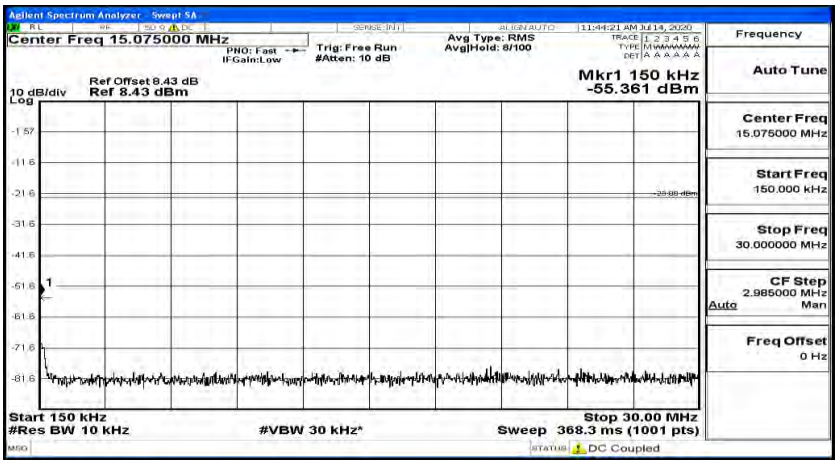
(Channel Bandwidth: 1.4 MHz)_LCH_QPSK_1RB#0



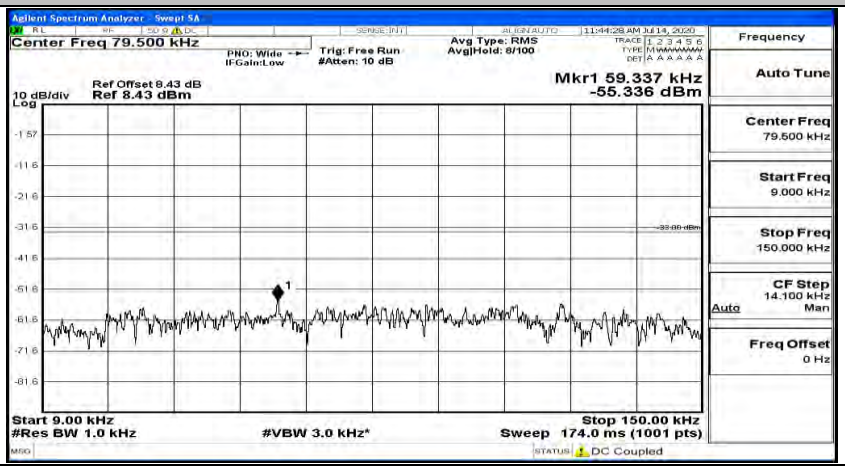


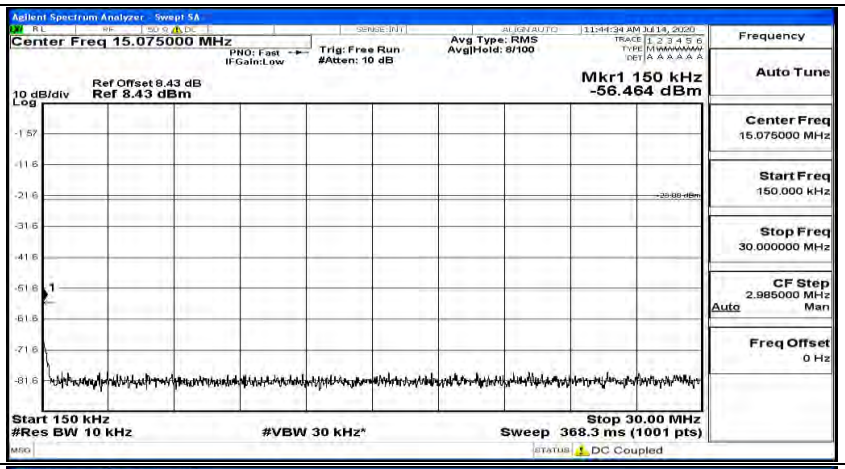
(Channel Bandwidth: 1.4 MHz)_LCH_QPSK_1RB#3

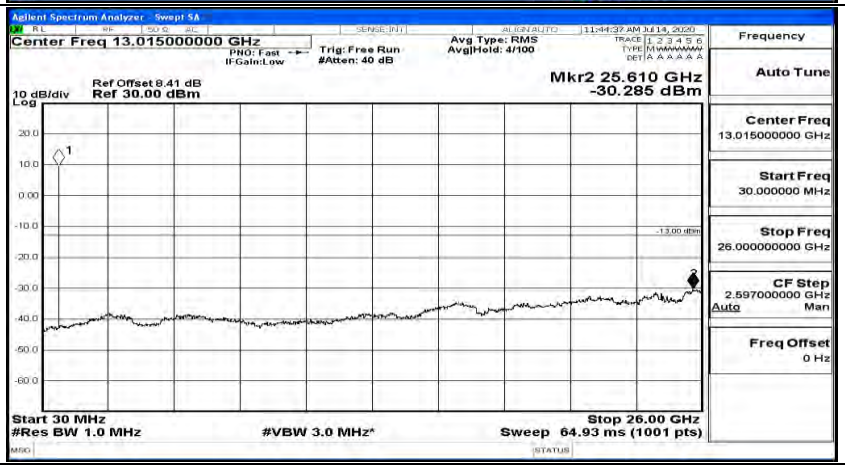




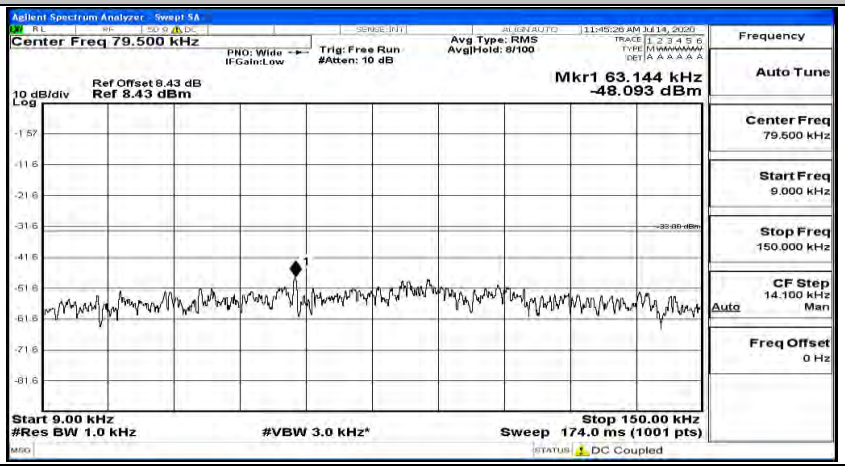
(Channel Bandwidth: 1.4 MHz)_LCH_QPSK_1RB#5

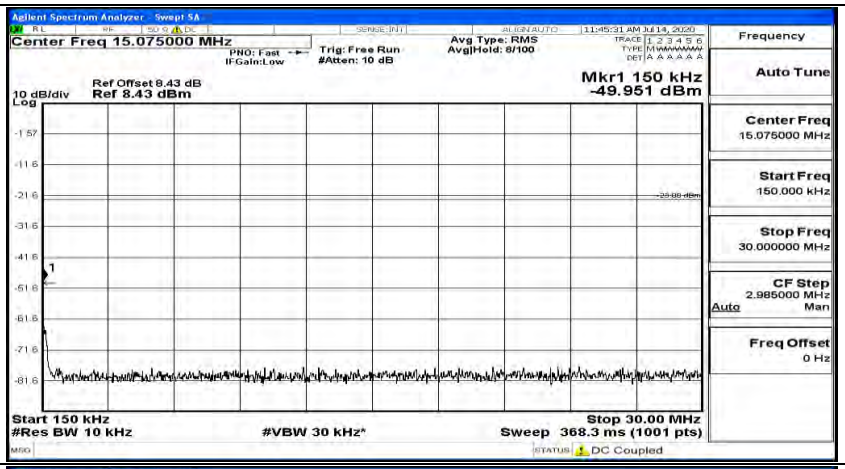




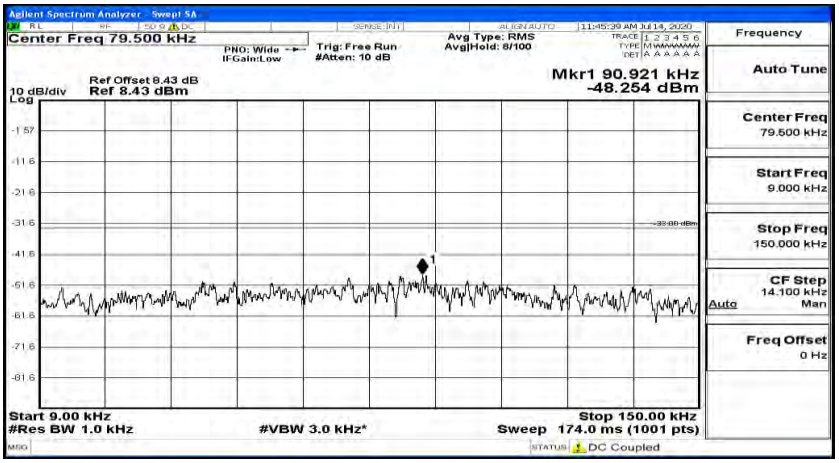


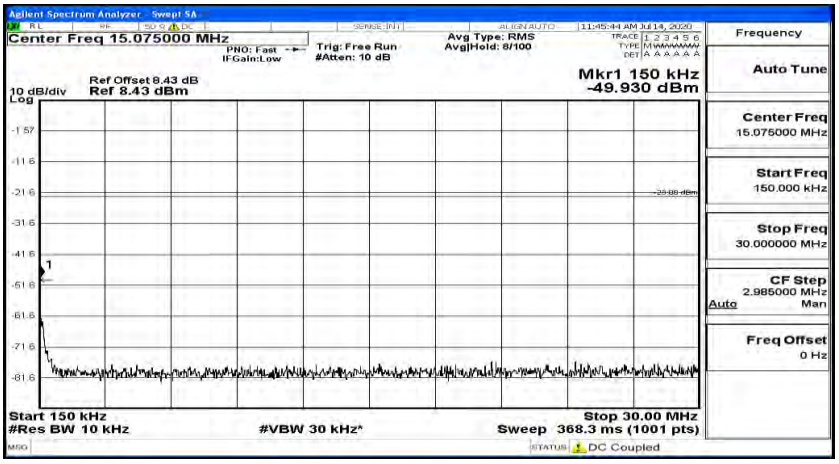
(Channel Bandwidth: 1.4 MHz)_MCH_QPSK_1RB#0



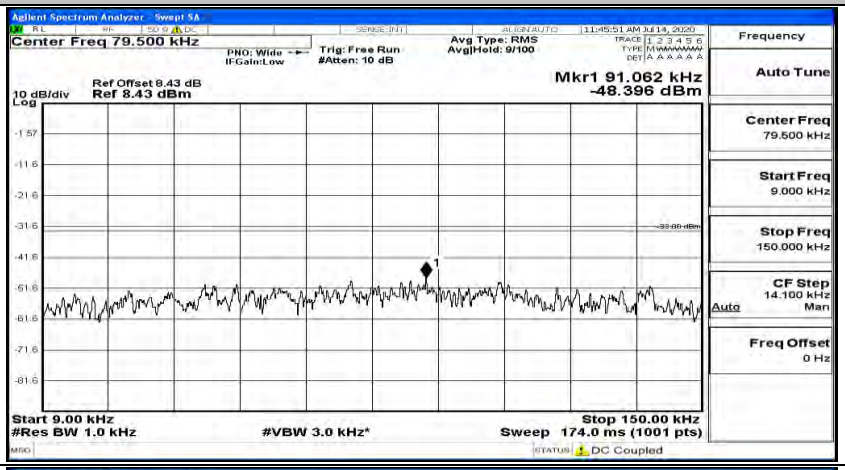


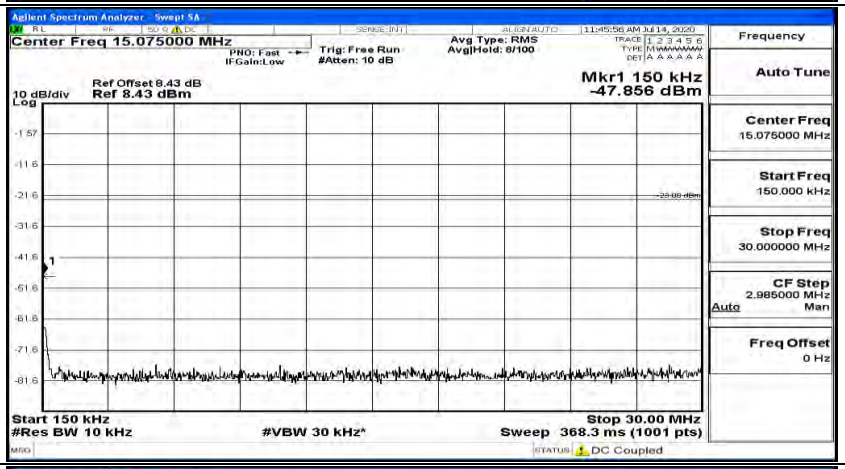
(Channel Bandwidth: 1.4 MHz)_MCH_QPSK_1RB#3



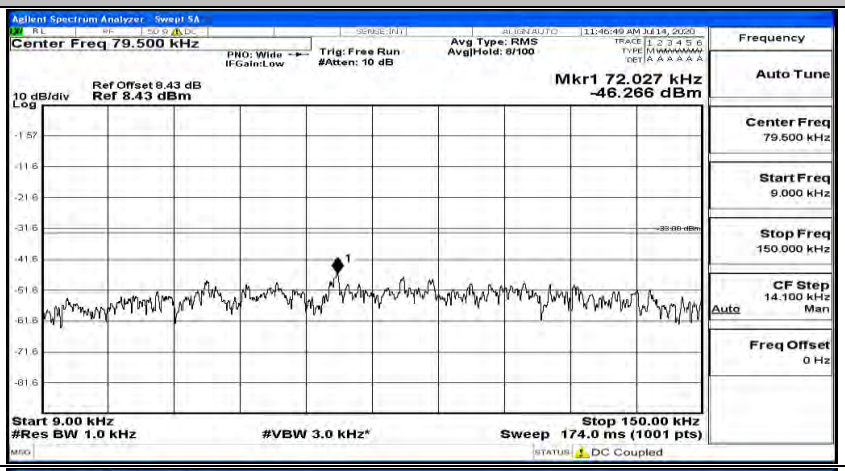


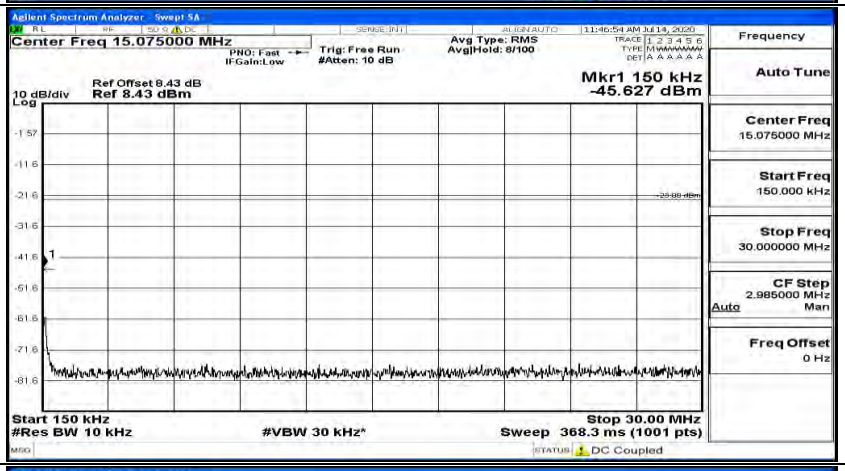
(Channel Bandwidth: 1.4 MHz)_MCH_QPSK_1RB#5



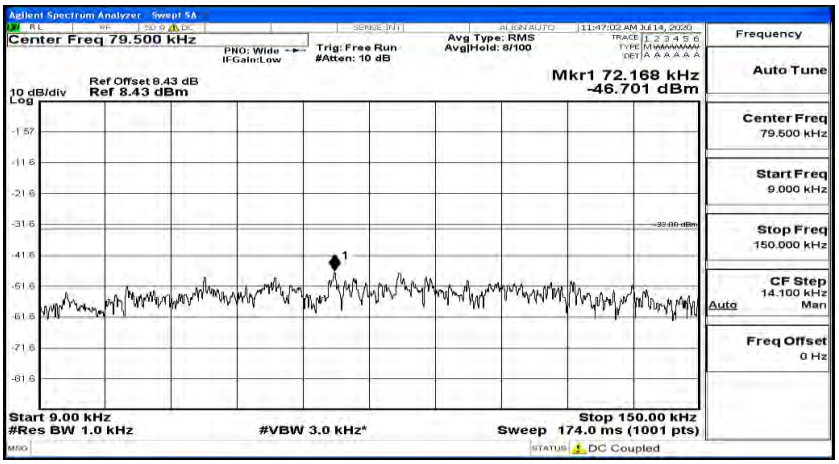


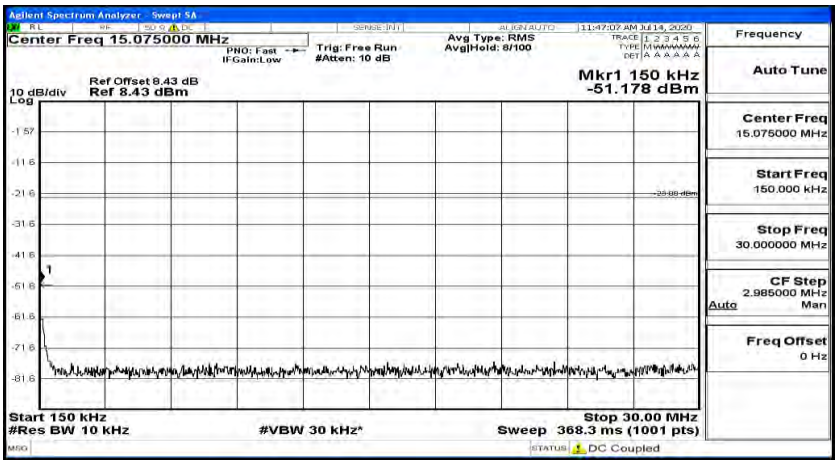
(Channel Bandwidth: 1.4 MHz)_HCH_QPSK_1RB#0



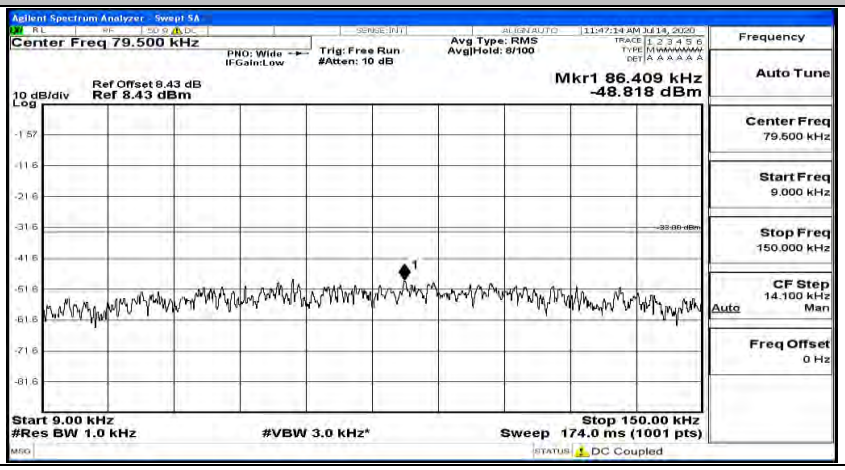


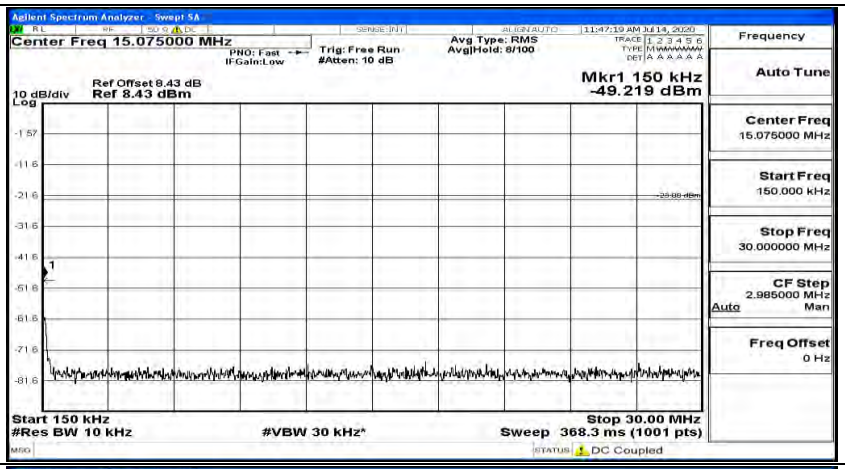
(Channel Bandwidth: 1.4 MHz)_HCH_QPSK_1RB#3



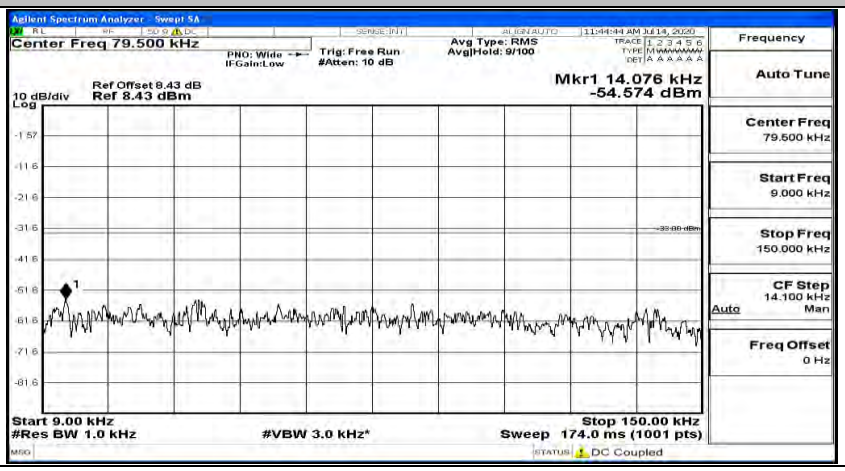


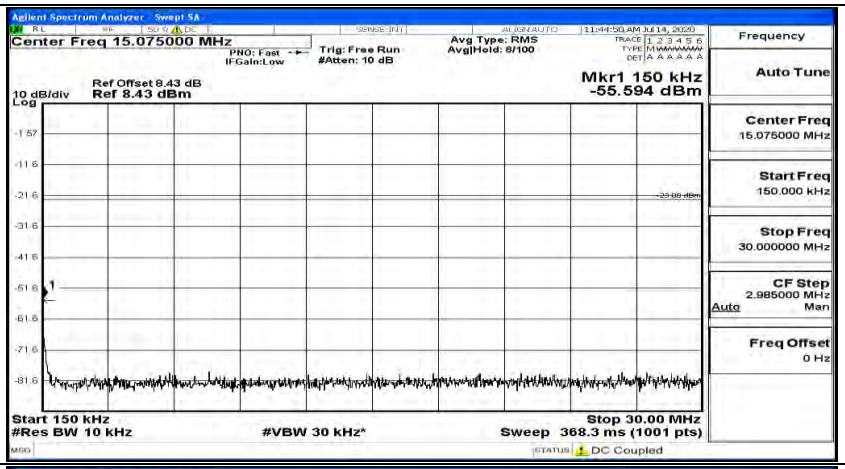
(Channel Bandwidth: 1.4 MHz)_HCH_QPSK_1RB#5

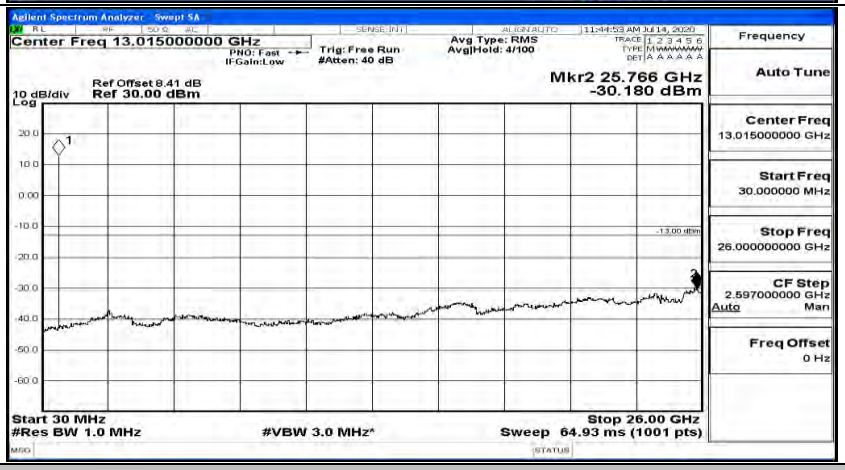




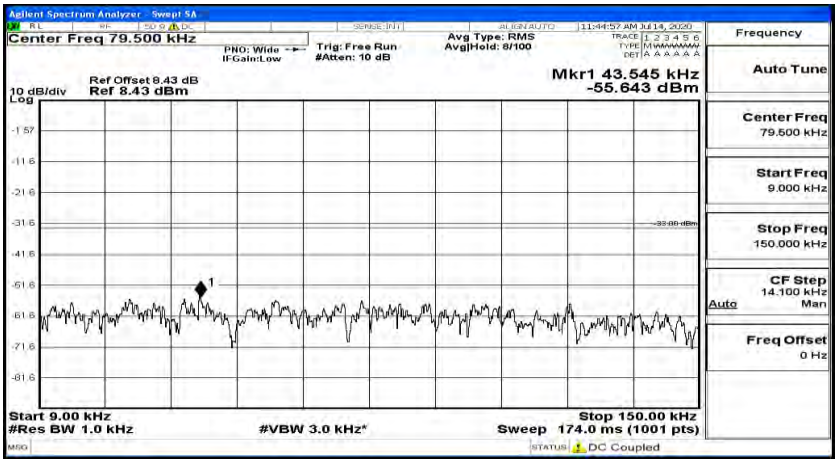
(Channel Bandwidth: 1.4 MHz)_LCH_16QAM_1RB#0

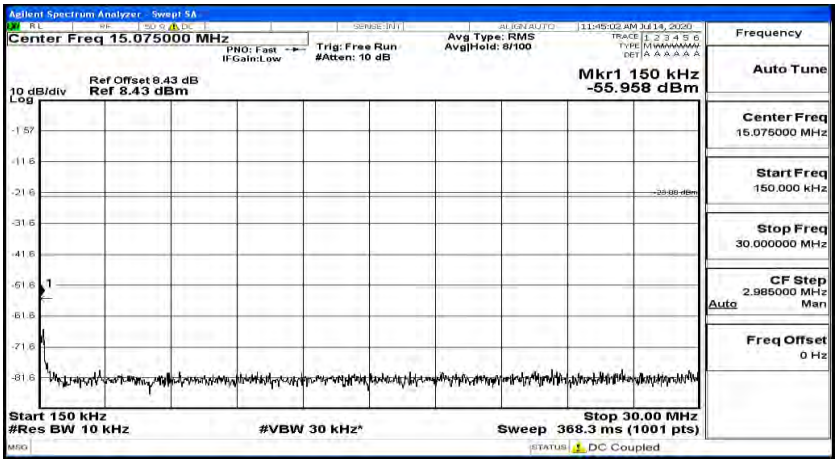




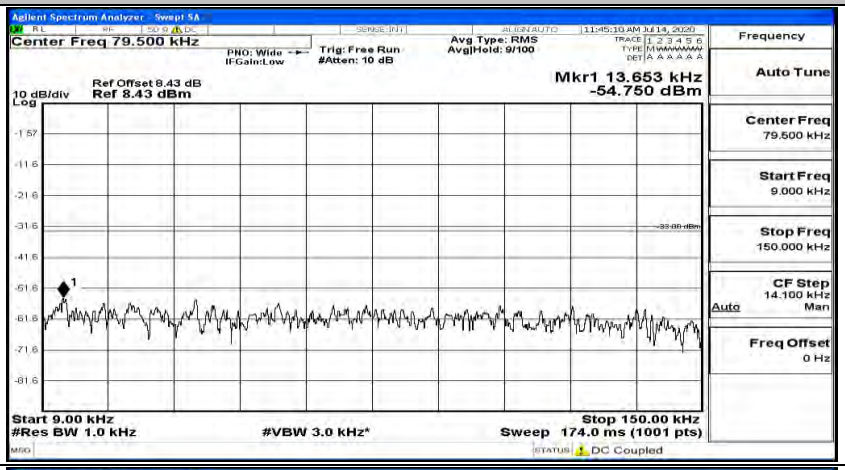


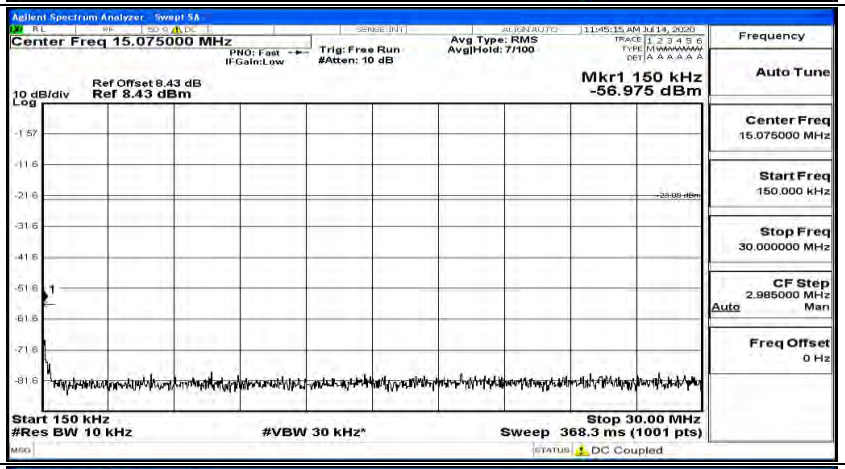
(Channel Bandwidth: 1.4 MHz)_LCH_16QAM_1RB#3



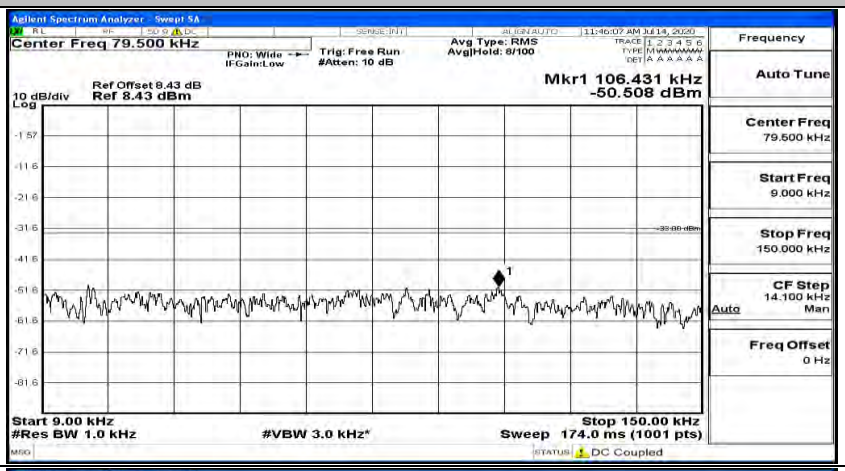


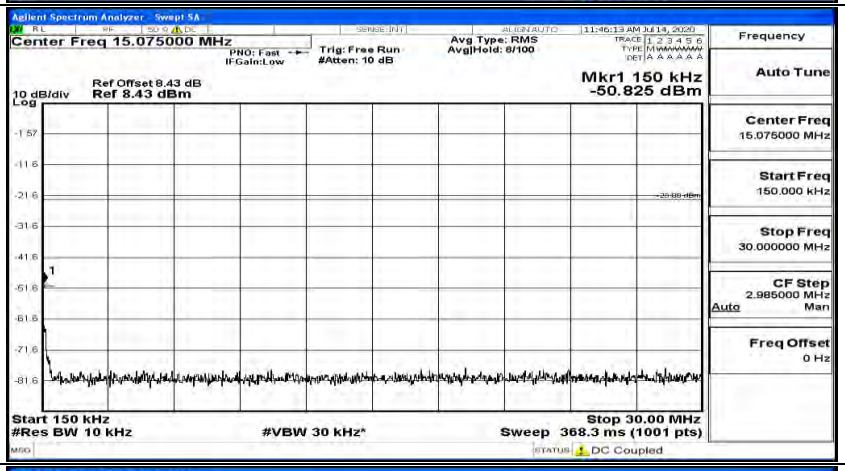
(Channel Bandwidth: 1.4 MHz)_LCH_16QAM_1RB#5



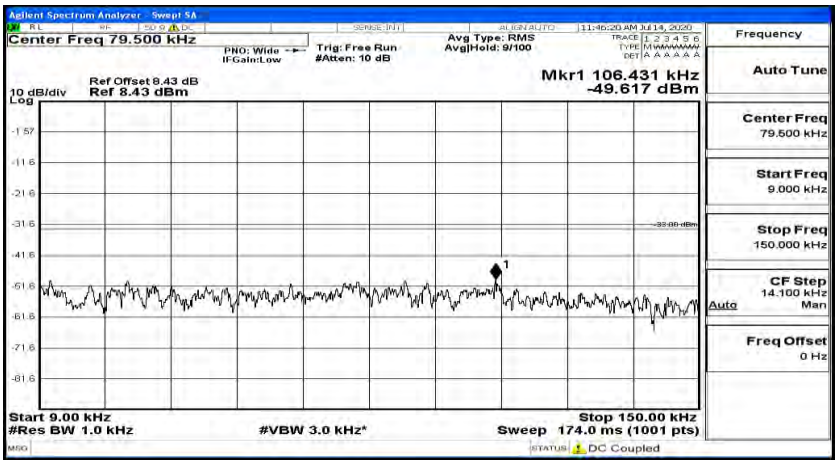


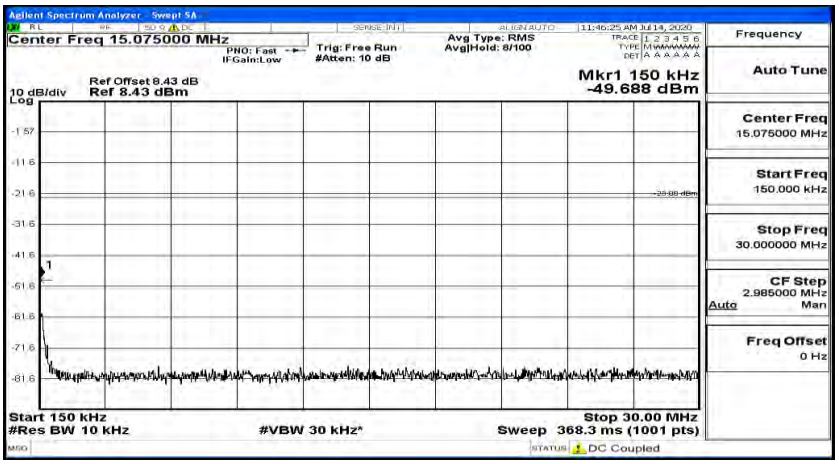
(Channel Bandwidth: 1.4 MHz)_MCH_16QAM_1RB#0



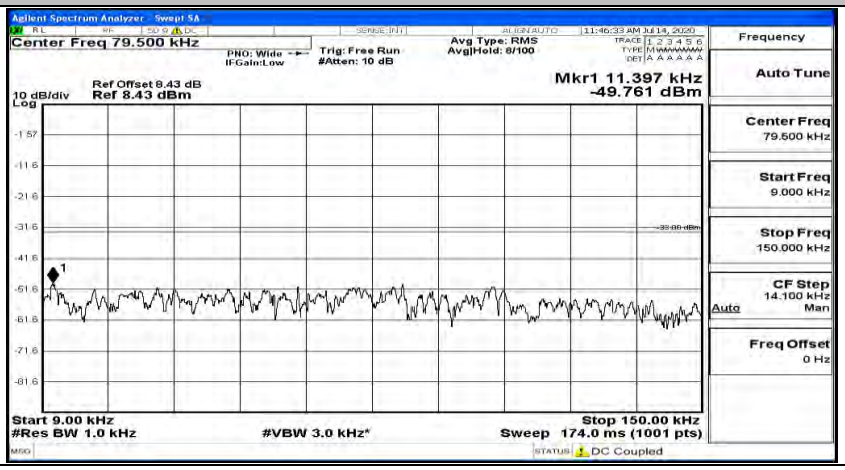


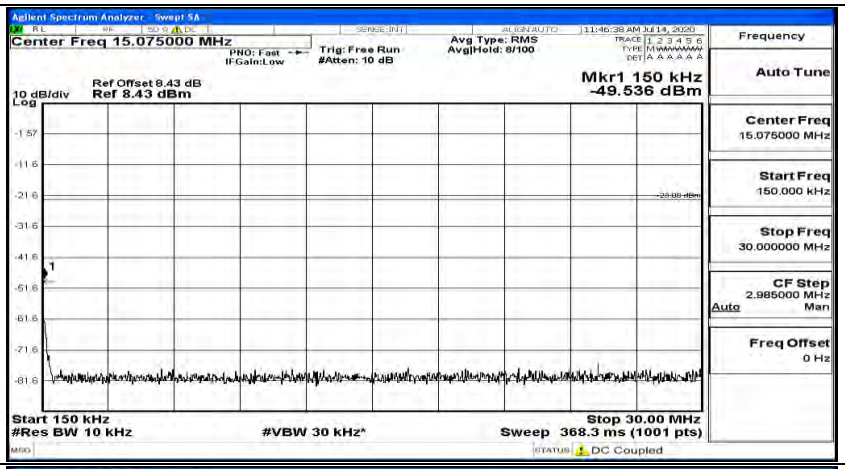
(Channel Bandwidth: 1.4 MHz)_MCH_16QAM_1RB#3



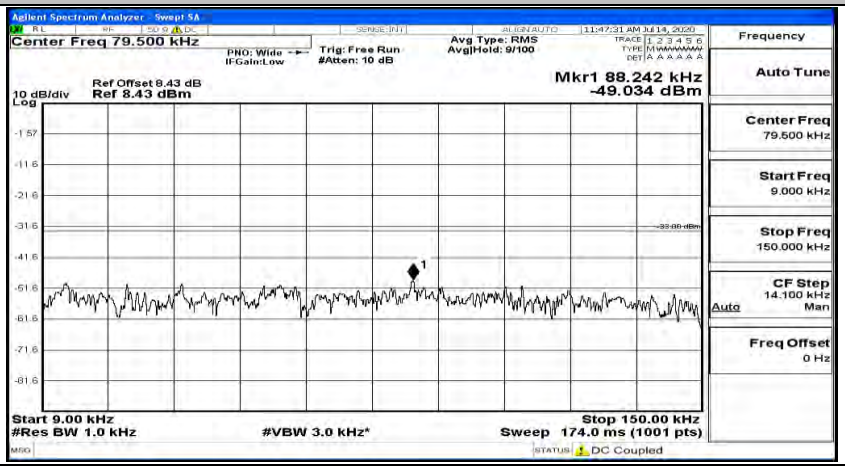


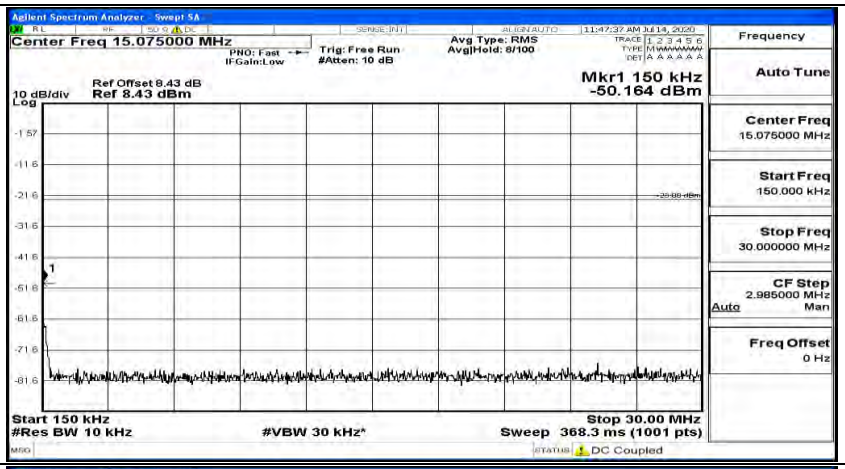
(Channel Bandwidth: 1.4 MHz)_MCH_16QAM_1RB#5



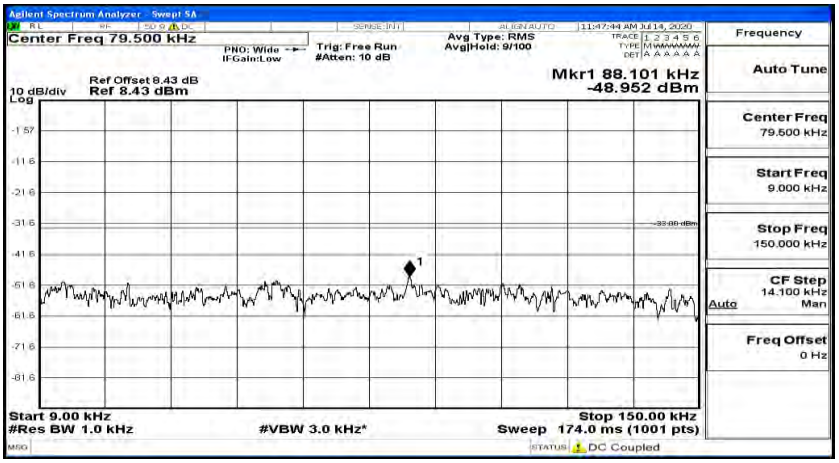


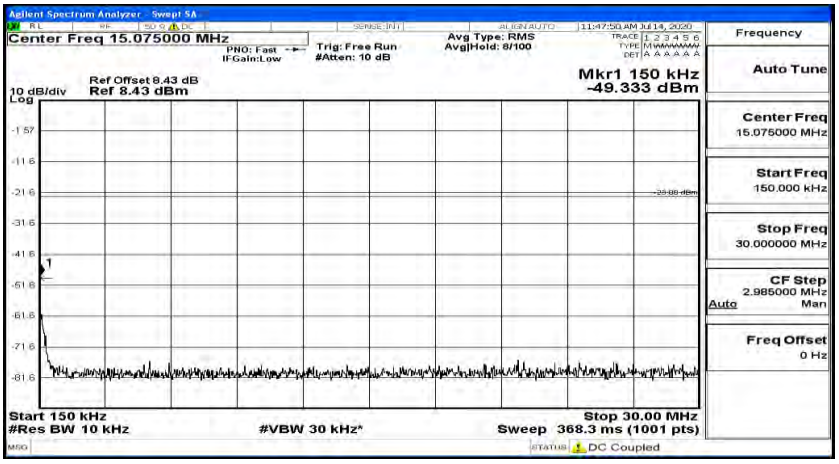
(Channel Bandwidth: 1.4 MHz)_HCH_16QAM_1RB#0



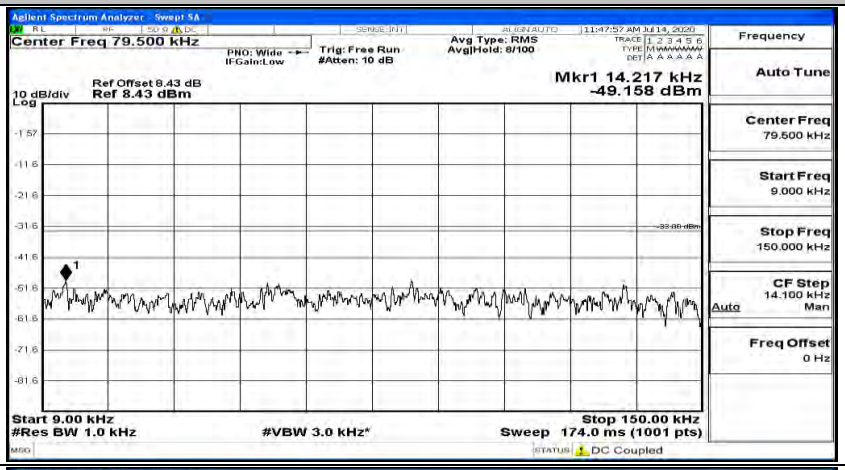


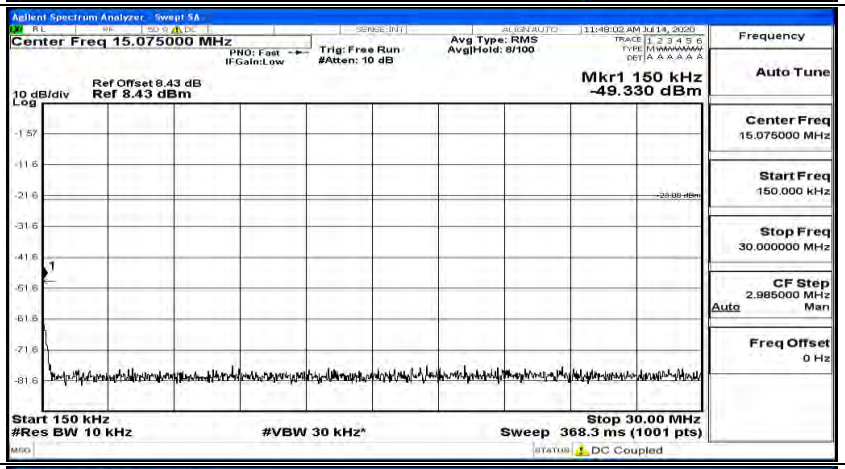
(Channel Bandwidth: 1.4 MHz)_HCH_16QAM_1RB#3





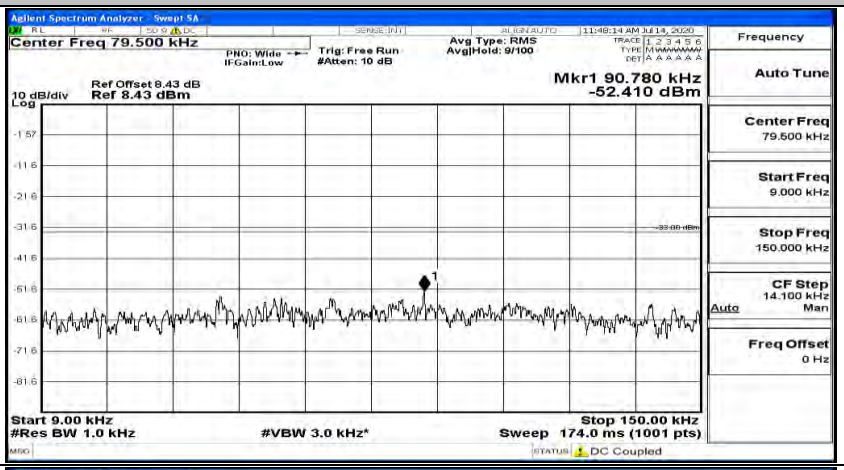
(Channel Bandwidth: 1.4 MHz)_HCH_16QAM_1RB#5

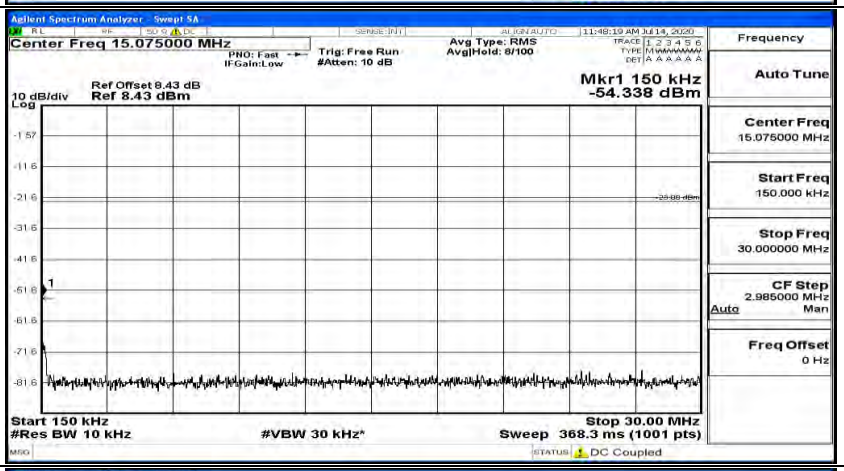




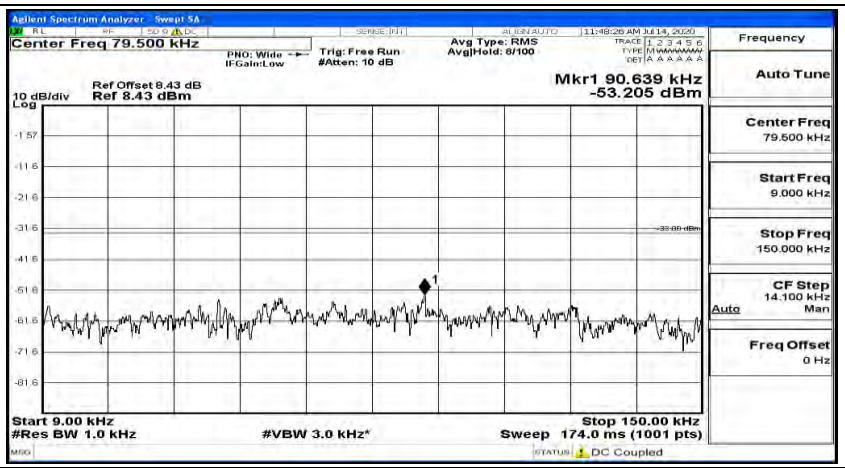
Channel Bandwidth: 3 MHz

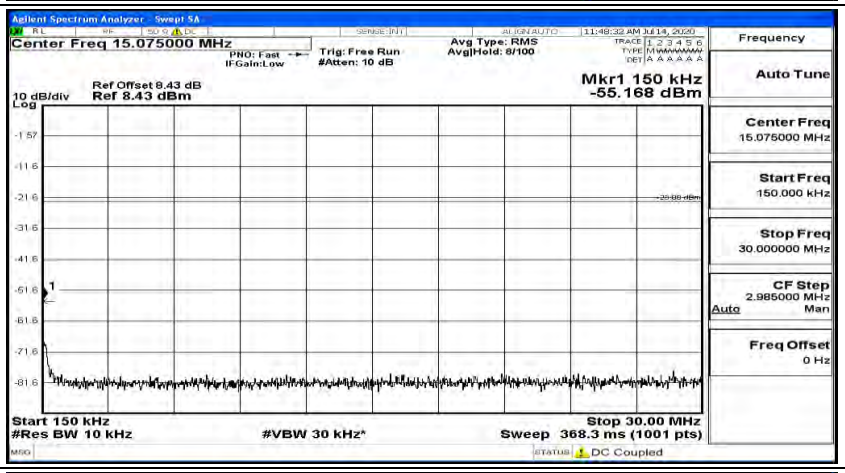
(Channel Bandwidth: 3 MHz)_LCH_QPSK_1RB#0

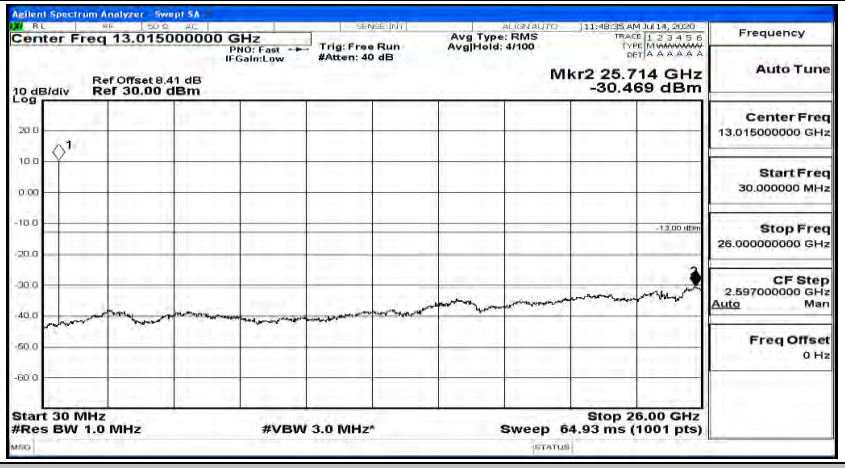
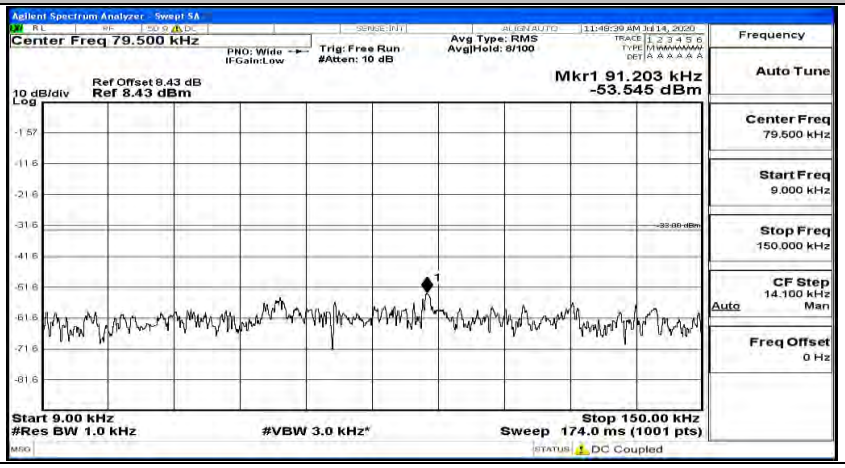




(Channel Bandwidth: 3 MHz)_LCH_QPSK_1RB#7



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